



# NOVARA

TECHNOLOGIES



## *General Catalog*

<b>A</b>	<b>Hybrid Stepper Motor</b>	<b>A0-A33</b>
<b>B</b>	<b>Hybrid Stepper Gear Motor</b>	<b>B0-B15</b>
<b>C</b>	<b>IP65 Rated Stepper Motor</b>	<b>C0-C4</b>
<b>D</b>	<b>PM Stepper Motor</b>	<b>D0-D9</b>
<b>E</b>	<b>PM Stepper Gear Motor</b>	<b>E0-E8</b>
<b>F</b>	<b>Stepper Motor Drive</b>	<b>F0-F18</b>

A

## NHB Series Hybrid Stepper Motor



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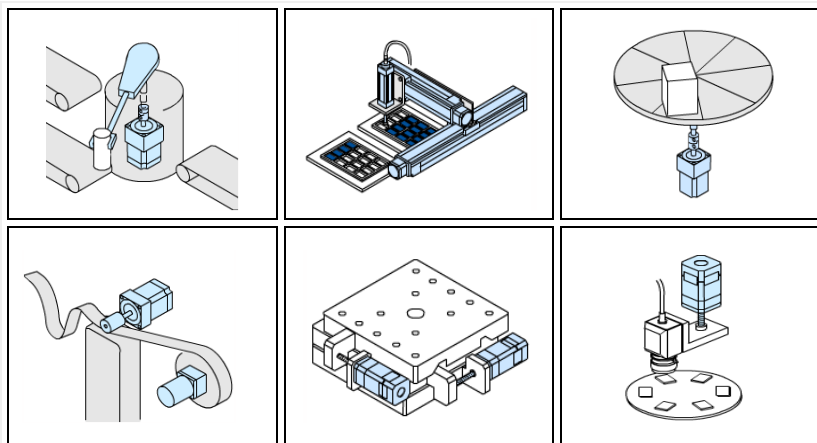
## Description

Novara specializes in offering 2-phase, 3-phase and 5-phase hybrid stepper motors, covering a wide range of applications with a frame size of NEMA 8 to 42. Made of high quality cold roll sheet copper and anti-high temperature permanent magnet, all of Novara's hybrid stepper motors are a complete design of high reliability, high accuracy, and featuring low noise, low vibration, low motor heating and smooth run. Besides conventional solutions, custom housing and winding, shaft modification, as well as encoder, brake, gearbox adders are also available to optimize the product's performance for you needs.

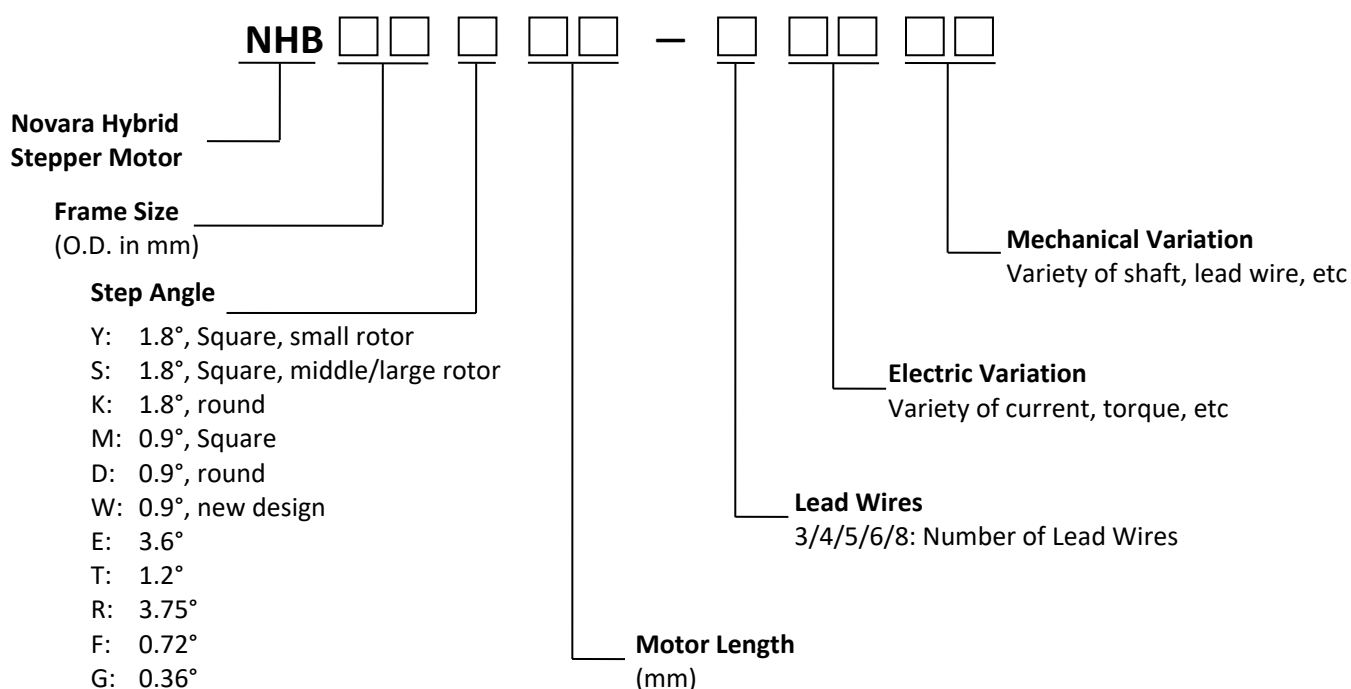
## Applications

Novara's NHB Series stepper motors are widely used in kinds of applications. Typical ones are shown as follows.





























- Automation and inspection
- Conveyor transfer
- Cut-to-length metal, plastic, fabric, etc.
- Industrial HVAC
- Material handling
- Medical equipment
- Office peripheral equipment
- Packaging systems
- Pick-and-place applications
- Printing systems
- Robotics
- Semiconductor manufacturing
- Many others



## Part Number

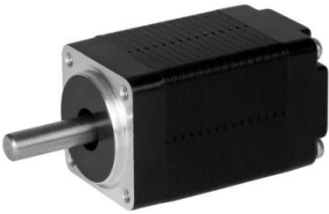


## Standard Versions

Frame Size					
NEMA 8	 1.8°				
NEMA 10	 1.8° Round				
NEMA 11	 1.8°				
NEMA 14	 1.8°	 0.9°	 0.9° Round		
NEMA 16	 1.8°	 0.9°	 0.36°		
NEMA 17	 1.8°	 0.9°	 3.6°	 3.75°	 1.2°
NEMA 23	 1.8°	 1.8° Round	 0.9°	 1.2°	
NEMA 24	 1.8°	 1.2°	 0.72°		
NEMA 34	 1.8°	 1.8° Round	 0.9°	 1.2°	 0.72° Round
NEMA 42	 1.8°	 1.2°			

NEMA 8 1.8°

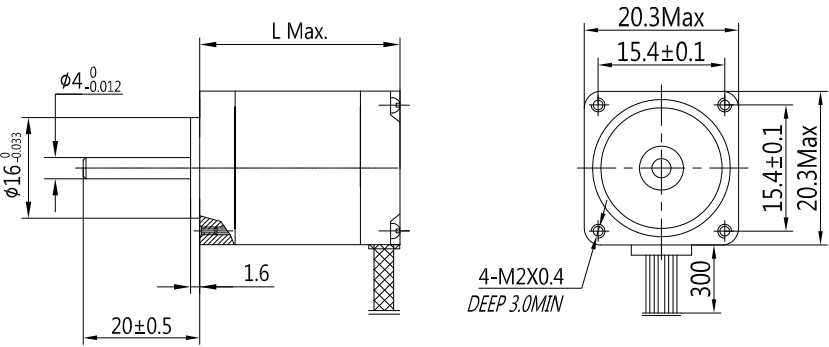
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



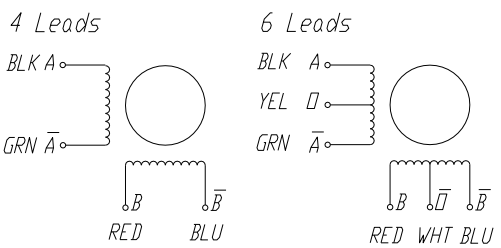
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB20Y28-402	0.2	23	8.2	1.4	0.2	2.5	Bi (4)	50	28
NHB20Y28-406	0.6	3.2	0.9	1.4	0.2	2.5	Bi (4)	50	28
NHB20Y34-402	0.2	25	8.4	1.8	0.3	3.2	Bi (4)	70	34
NHB20Y34-406	0.6	4.5	1.2	1.8	0.3	3.2	Bi (4)	70	34
NHB20Y40-402	0.2	32	8.8	2.4	0.5	4.5	Bi (4)	82	40
NHB20Y40-406	0.6	5.8	1.6	2.4	0.5	4.5	Bi (4)	82	40

Mechanical Dimension



Wiring Diagram



NEMA 10

1.8°

Round

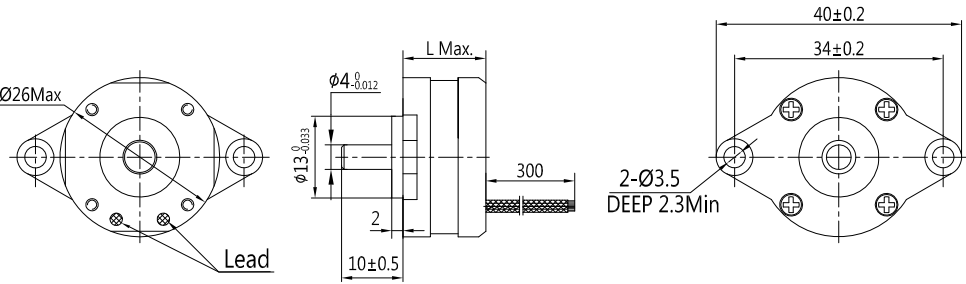
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max. (rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



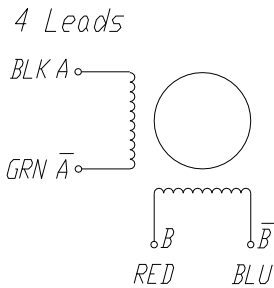
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB26K13-420	0.3	20	3.2	1.2	0.2	2.5	Bi (4)	50	13.5

Mechanical Dimension



Wiring Diagram



NEMA 11 1.8°

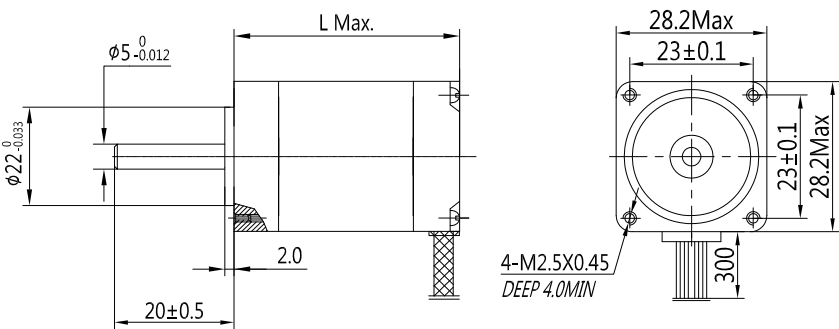
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max. (rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



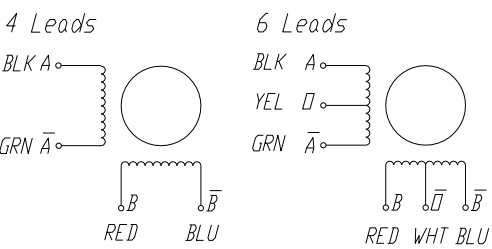
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB28Y28-401	0.6	4.2	2.2	4.5	0.3	6	Bi (4)	95	28
NHB28Y28-402	0.35	12	5.8	4.5	0.3	6	Bi (4)	95	28
NHB28Y33-401	0.6	5.5	3.2	6.0	0.4	8	Bi (4)	110	33
NHB28Y33-402	0.35	15	9.2	6.0	0.4	8	Bi (4)	110	33
NHB28Y41-401	0.6	7.0	6.0	8.0	0.5	11	Bi (4)	140	41
NHB28Y41-402	0.35	20	15	8.0	0.5	11	Bi (4)	140	41
NHB28Y50-401	0.6	9.0	7.2	10	0.8	13	Bi (4)	180	50
NHB28Y50-402	0.35	24	18.5	10	0.8	13	Bi (4)	180	50

Mechanical Dimension



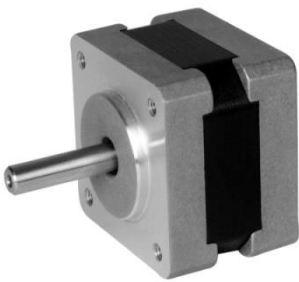
Wiring Diagram



NEMA 14

1.8°

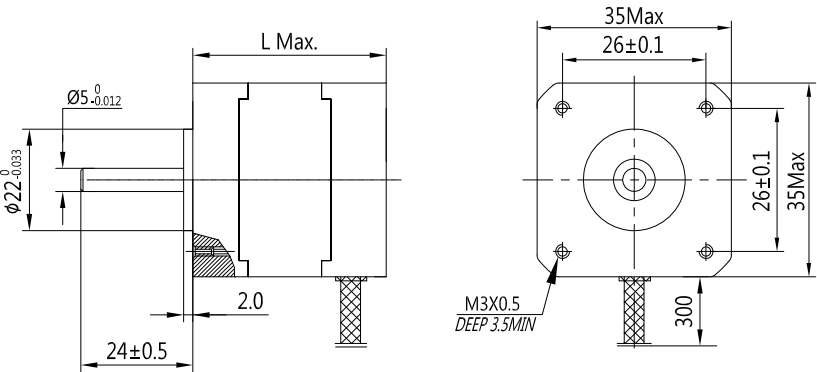
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



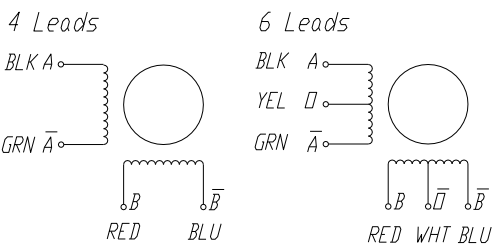
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB35Y20-404	0.4	22	16	5	0.5	9	Bi (4)	90	20
NHB35Y26-402	0.8	4.2	4.5	10	0.6	10	Bi (4)	110	26
NHB35Y28-401	0.46	20	14	12	0.8	11	Bi (4)	120	28
NHB35Y28-402	0.8	5.0	5.0	12	0.8	11	Bi (4)	120	28
NHB35Y28-630	0.4	30	11	9	0.8	11	Uni (6)	120	28
NHB35Y34-401	0.42	25	32	18	1.0	13	Bi (4)	160	34
NHB35Y34-402	0.8	6.5	9.8	18	1.0	13	Bi (4)	160	34
NHB35Y34-630	0.4	30	22	12	1.0	13	Uni (6)	160	34
NHB35Y42-402	0.8	10.5	13	22	1.5	22	Bi (4)	200	42
NHB35Y52-415	1.5	3.5	7.6	30	2.0	26	Bi (4)	230	52
NHB35Y52-418	1.8	2.5	5.0	30	2.0	26	Bi (4)	230	52

Mechanical Dimension



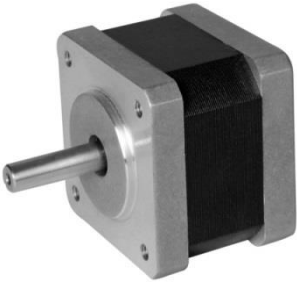
Wiring Diagram



NEMA 14

0.9°

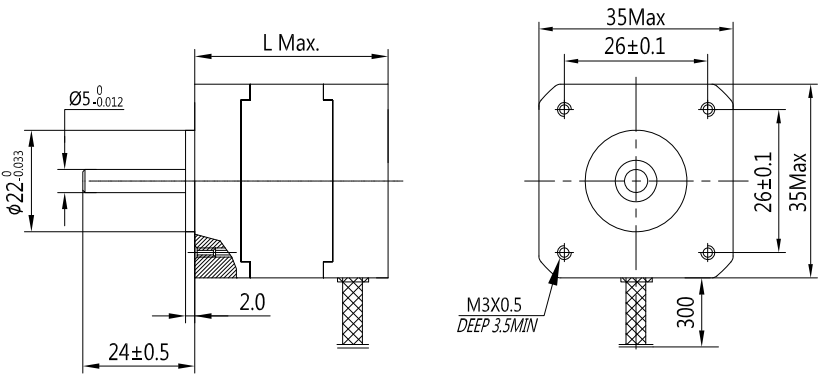
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



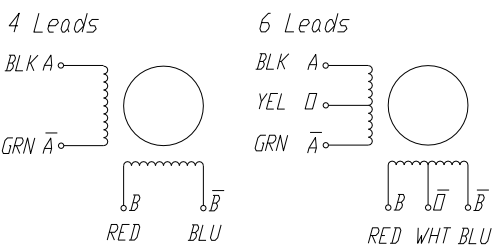
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/φ	Ω/φ	mH/φ	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB35W20-404	0.4	24	18	5	0.2	10	Bi (4)	120	20
NHB35W28-405	0.55	10	9.5	9	0.3	12	Bi (4)	130	28
NHB35W28-408	0.8	4.5	4.5	9	0.3	12	Bi (4)	130	28
NHB35W28-436	0.36	22	20	9	0.3	12	Bi (4)	130	28
NHB35W28-630	0.4	30	12	8	0.3	12	Uni (6)	130	28
NHB35W34-402	0.55	12	19	14	0.6	18	Bi (4)	190	34
NHB35W34-403	0.8	6.0	10	14	0.6	18	Bi (4)	190	34
NHB35W34-436	0.36	28	42	14	0.6	18	Bi (4)	190	34
NHB35W34-630	0.4	30	18	10	0.6	18	Uni (6)	190	34

Mechanical Dimension



Wiring Diagram



NEMA 14

0.9°

Round

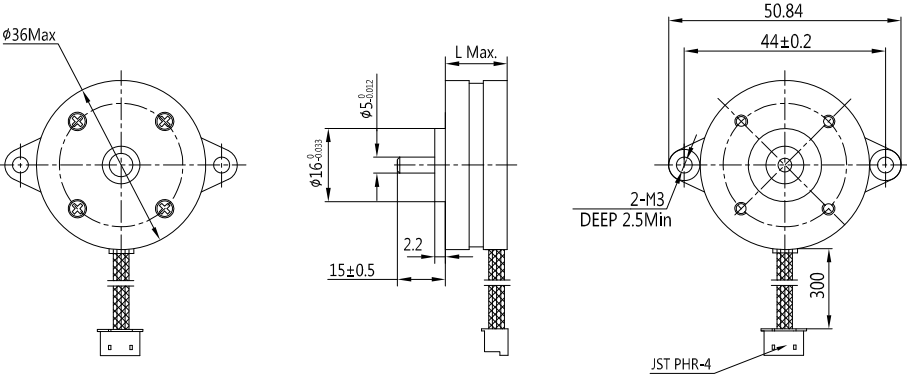
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



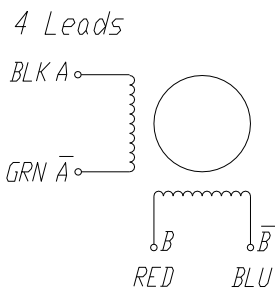
### Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB36D13-403	0.3	19	9	3.2	0.3	3	Bi (4)	40	13.5
NHB36D15-403	0.3	16.8	8.2	4.2	0.5	4	Bi (4)	55	15.2
NHB36D20-445	0.45	14.5	12.5	9.0	0.8	6	Bi (4)	95	19.7

### Mechanical Dimension



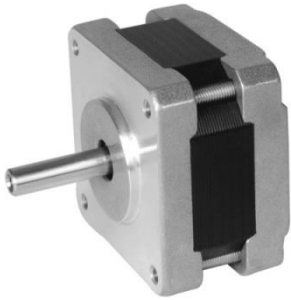
### Wiring Diagram



NEMA 16

1.8°

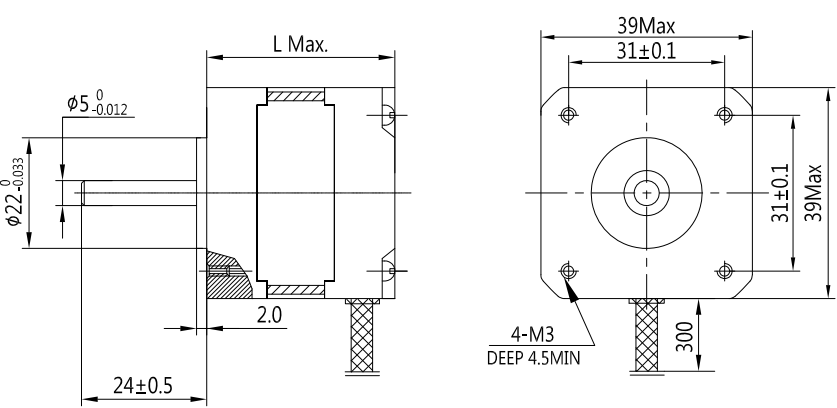
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



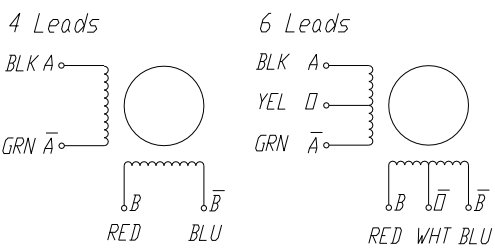
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB39Y20-401	0.42	18	12	8	0.5	12	Bi (4)	100	20
NHB39Y26-401	0.6	9	10	14	0.8	14	Bi (4)	120	26
NHB39Y34-401	0.6	12	13	18	1.0	19	Bi (4)	160	34
NHB39Y34-402	1.2	3.2	3.0	16	1.0	19	Bi (4)	160	34
NHB39Y34-630	0.4	30	14	12	1.0	19	Uni (6)	160	34
NHB39Y40-401	0.6	12	20	24	1.2	24	Bi (4)	210	40
NHB39Y40-402	1.2	3.8	6.5	24	1.2	24	Bi (4)	210	40
NHB39Y40-630	0.4	30	22	18	1.2	24	Uni (6)	210	40

Mechanical Dimension



Wiring Diagram



NEMA 16

0.9°

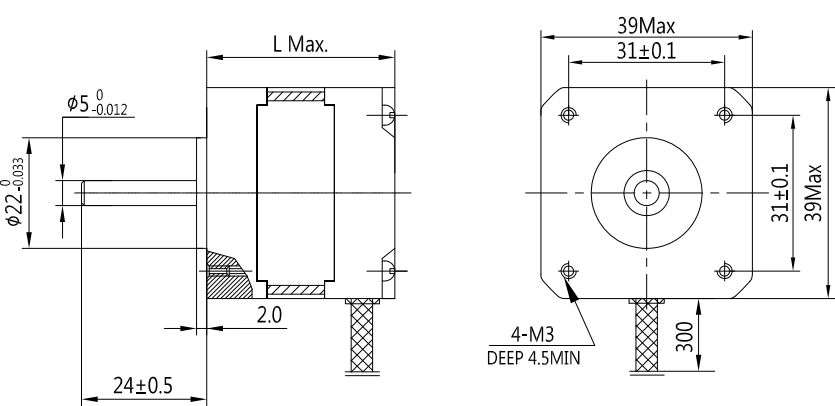
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



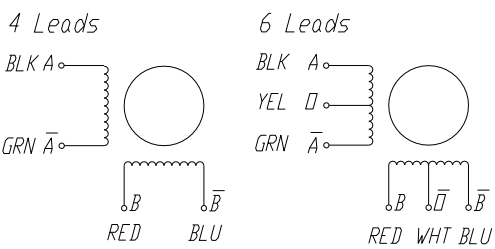
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB39M20-401	0.42	20	16	8	0.5	15	Bi (4)	100	20
NHB39M26-401	0.6	9	16	14	0.8	18	Bi (4)	120	26
NHB39M34-401	0.6	9	15	16	1.1	23	Bi (4)	160	34
NHB39M34-402	1.2	2.5	3.6	16	1.1	23	Bi (4)	160	34
NHB39M34-630	0.4	30	16	12	1.1	23	Uni (6)	160	34
NHB39M40-401	0.6	12	20	22	1.4	30	Bi (4)	210	40
NHB39M40-402	1.2	3.2	5.5	22	1.4	30	Bi (4)	210	40
NHB39M40-630	0.4	30	26	18	1.4	30	Uni (6)	210	40

Mechanical Dimension



Wiring Diagram



NEMA 16

0.36°

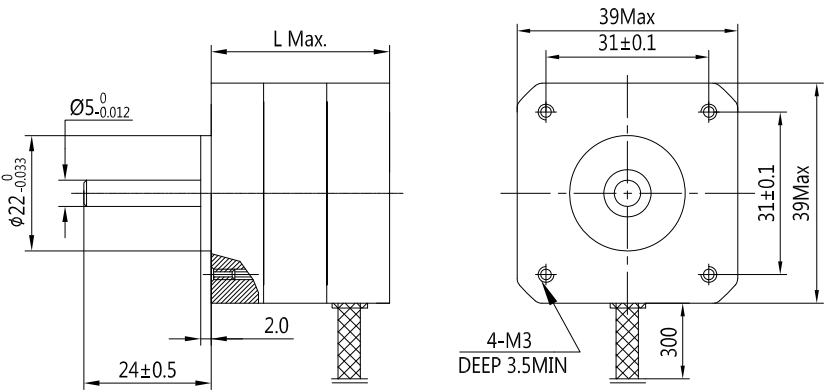
Step Angle	0.36°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



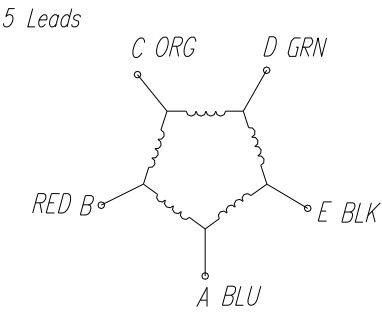
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/φ	Ω/φ	mH/φ	N.cm	N.cm	g.cm <sup>2</sup>	Pin	g	mm
NHB39G31-508	0.75	1.8	1.8	7.5	1.2	14	5	140	31
NHB39G40-508	0.75	2.5	2.5	13.5	1.6	25	5	200	40

Mechanical Dimension



Wiring Diagram



NEMA 17      3.6°

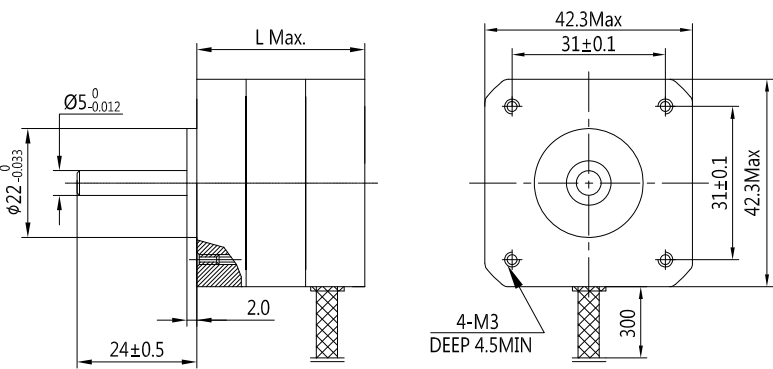
Step Angle	3.6°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



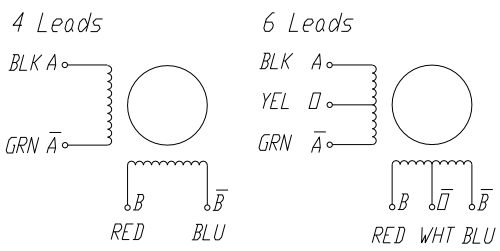
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB42E34-401	0.52	12	13.5	12	1.6	34	Bi (4)	220	34
NHB42E34-602	0.6	10.5	4.5	8.5	1.6	34	Uni (6)	220	34
NHB42E34-616	0.16	75	28	8	1.6	34	Uni (6)	220	34

Mechanical Dimension



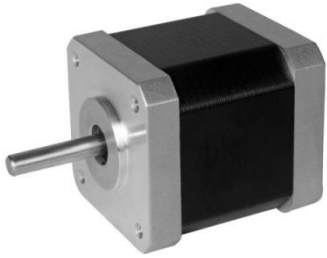
Wiring Diagram



NEMA 17

1.8°

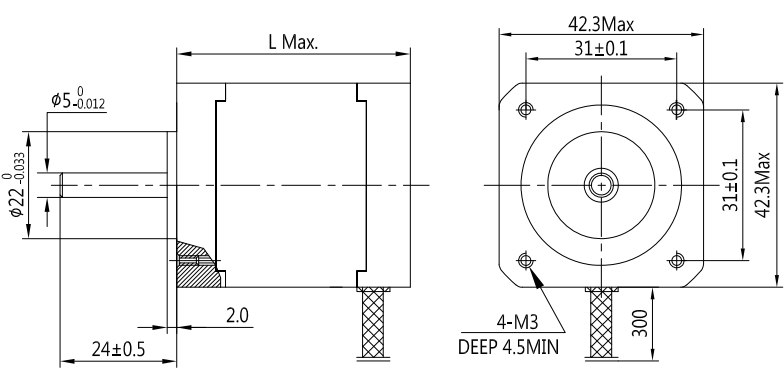
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



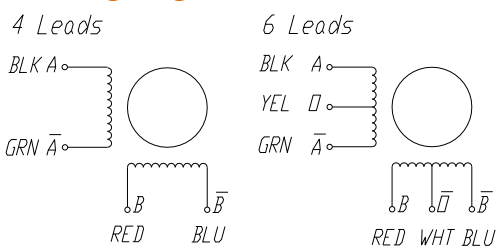
## Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB42S20-410	0.8	3.8	4.5	10	1.0	24	Bi (4)	120	20
NHB42S28-406	0.6	8.0	10	12	1.2	30	Bi (4)	150	28
NHB42S34-401	1.3	2.4	2.8	28	1.6	34	Bi (4)	220	34
NHB42S34-402	1.7	1.2	1.8	28	1.6	34	Bi (4)	220	34
NHB42S34-430	0.4	30	35	28	1.6	34	Bi (4)	220	34
NHB42S34-630	0.4	30	18	21	1.6	34	Uni (6)	220	34
NHB42S40-401	1.3	2.5	5.0	40	2.2	54	Bi (4)	280	40
NHB42S40-402	1.7	1.5	2.8	40	2.2	54	Bi (4)	280	40
NHB42S40-601	1.2	3.2	2.8	28	2.2	54	Uni (6)	280	40
NHB42S40-630	0.4	30	28	28	2.2	54	Uni (6)	280	40
NHB42S48-401	1.3	3.2	5.5	52	2.6	68	Bi (4)	350	48
NHB42S48-402	1.7	1.8	3.2	52	2.6	68	Bi (4)	350	48
NHB42S48-403	2.3	1.2	1.6	52	2.6	68	Bi (4)	350	48
NHB42S48-630	0.4	30	38	34	2.6	68	Uni (6)	350	48
NHB42S60-403	2.3	1.4	2.5	70	3.6	80	Bi (4)	480	60
NHB42S63-403	2.3	1.5	2.2	80	4.0	85	Bi (4)	500	63

## Mechanical Dimension

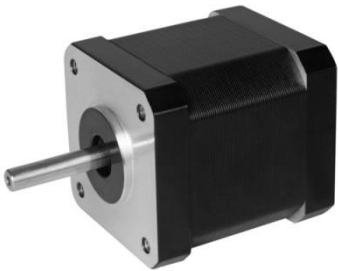


## Wiring Diagram



NEMA 17      0.9°

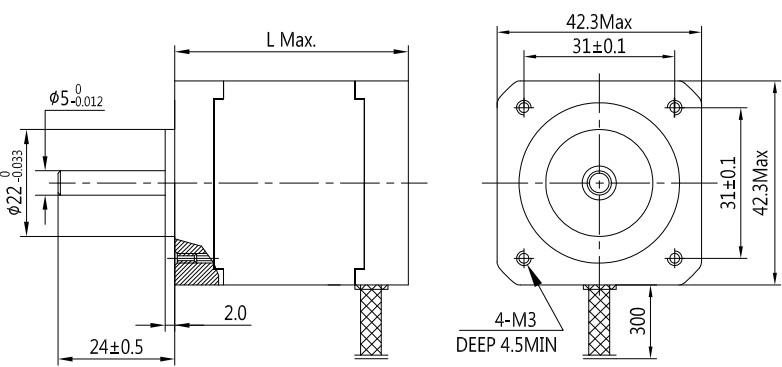
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



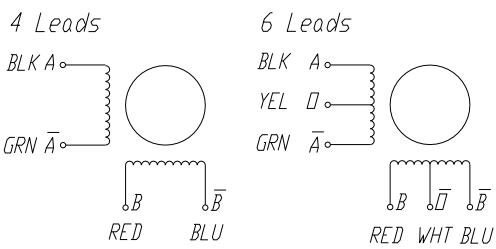
### Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB42W21-403	0.3	25	36	8	0.7	15	Bi (4)	120	21
NHB42W28-406	0.6	9	9	10	0.9	20	Bi (4)	150	28
NHB42W34-401	1.3	2.4	3.6	24	1.2	34	Bi (4)	220	34
NHB42W34-402	1.7	1.2	2.2	24	1.2	34	Bi (4)	220	34
NHB42W34-430	0.4	30	45	24	1.2	34	Bi (4)	220	34
NHB42W34-630	0.4	30	22	20	1.2	34	Uni (6)	220	34
NHB42W40-401	1.3	2.5	6.2	36	1.8	54	Bi (4)	280	40
NHB42W40-402	1.7	1.5	3.8	36	1.8	54	Bi (4)	280	40
NHB42W40-601	1.2	3.2	3.8	26	1.8	54	Uni (6)	280	40
NHB42W40-630	0.4	30	34	26	1.8	54	Uni (6)	280	40
NHB42W48-401	1.3	3.0	7.0	42	2.2	68	Bi (4)	350	48
NHB42W48-402	1.7	1.8	4.0	42	2.2	68	Bi (4)	350	48
NHB42W48-403	2.3	1.2	2.0	42	2.2	68	Bi (4)	350	48
NHB42W48-630	0.4	30	28	27	2.2	68	Uni (6)	350	48

### Mechanical Dimension



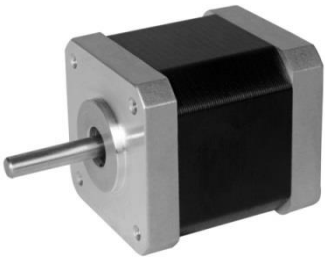
### Wiring Diagram



NEMA 17

3.75°

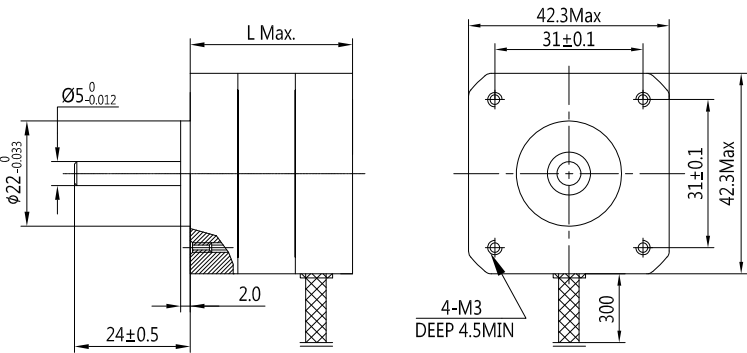
Step Angle	3.75°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



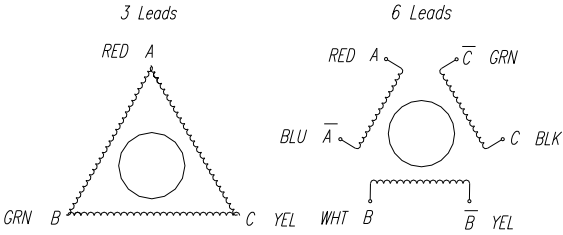
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	Pin	g	mm
NHB42R40-315	1.5	2.5	5.5	20	2.2	54	3	280	40
NHB42R48-315	1.5	3.6	7.0	30	2.6	68	3	350	48

Mechanical Dimension



Wiring Diagram



NEMA 171.2°

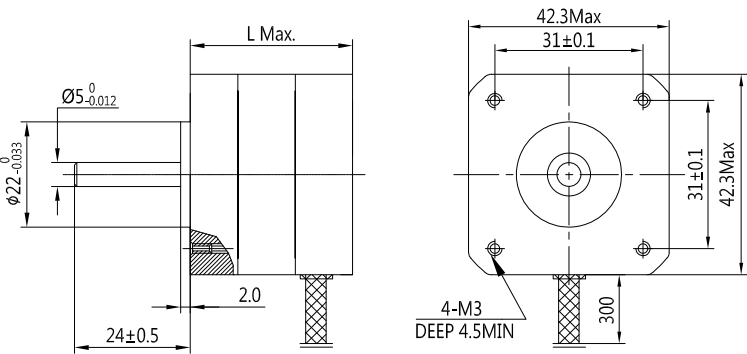
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



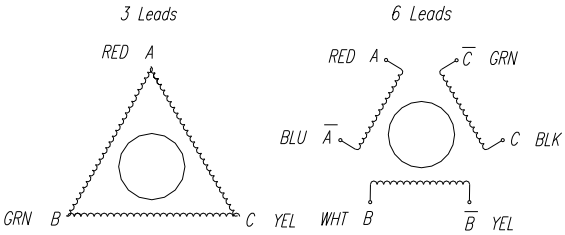
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	Pin	g	mm
NHB42T34-330	3.0	0.65	0.2	10	1.6	34	3	220	34
NHB42T40-330	3.0	0.79	0.35	20	2.2	54	3	280	40
NHB42T48-330	3.0	0.98	0.43	27	2.6	68	3	350	48

Mechanical Dimension



Wiring Diagram



NEMA 23

1.8°

Round

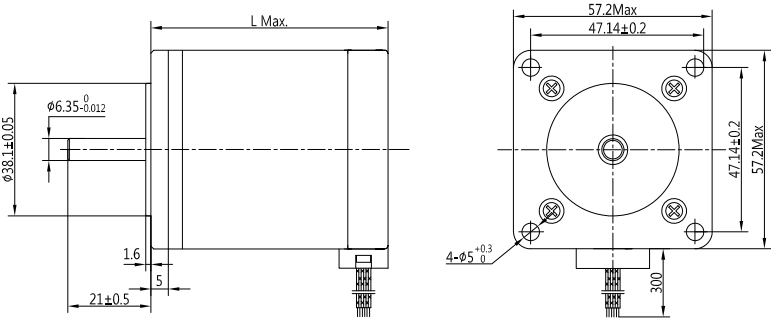
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



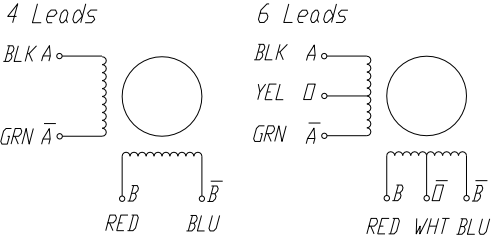
## Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB57K41-401	1.55	1.8	3.5	22	3.5	60	Bi (4)	450	41
NHB57K41-402	2.1	0.8	1.4	32	3.5	60	Bi (4)	450	41
NHB57K41-601	0.38	32	30	30	3.5	60	Uni (6)	450	41
NHB57K41-602	1.5	1.5	1.4	24	3.5	60	Uni (6)	450	41
NHB57K51-401	1.4	2.5	6.2	62	5.5	118	Bi (4)	600	51
NHB57K51-402	2.0	1.3	3.2	62	5.5	118	Bi (4)	600	51
NHB57K51-601	0.38	32	28	38	5.5	118	Uni (6)	600	51
NHB57K51-602	0.85	7.1	8.5	45	5.5	118	Uni (6)	600	51
NHB57K51-603	1.4	2.5	3.2	45	5.5	118	Uni (6)	600	51
NHB57K56-401	2.5	1.2	3.0	80	6.5	145	Bi (4)	650	56
NHB57K56-601	0.6	20	20	60	6.5	145	Uni (6)	650	56
NHB57K56-602	1.2	5.0	6.8	60	6.5	145	Uni (6)	650	56
NHB57K56-603	1.6	2.5	3.2	60	6.5	145	Uni (6)	650	56
NHB57K56-604	2.4	1.0	1.2	60	6.5	145	Uni (6)	650	56
NHB57K76-402	4.2	0.6	1.4	110	9.5	230	Bi (4)	800	76
NHB57K76-403	2.1	2.2	6.2	110	9.5	230	Bi (4)	800	76
NHB57K76-404	3.6	0.8	2.2	110	9.5	230	Bi (4)	800	76

## Mechanical Dimension



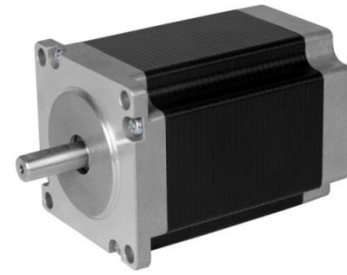
## Wiring Diagram



NEMA 23

1.8°

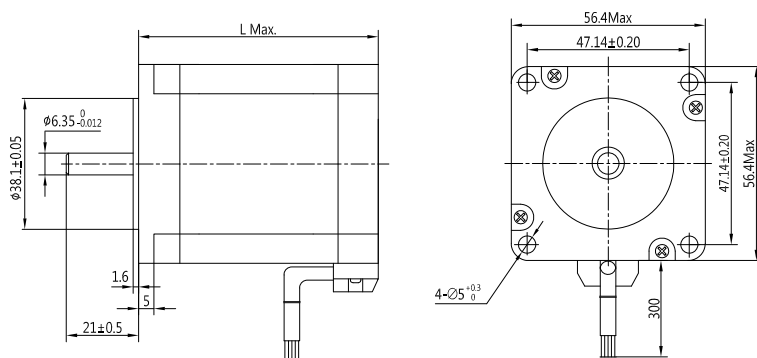
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



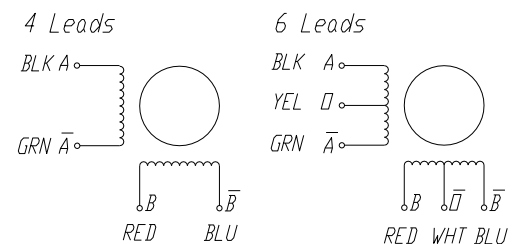
## Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB57S41-412	0.62	12	24	55	2.5	150	Bi (4)	470	41
NHB57S41-420	2.0	1.2	2.5	55	2.5	150	Bi (4)	470	41
NHB57S41-601	1.0	5.2	5.5	40	2.5	150	Uni (6)	470	41
NHB57S45-406	0.62	12	26	80	2.8	190	Bi (4)	520	45
NHB57S45-425	2.5	1.0	2.2	80	2.8	190	Bi (4)	520	45
NHB57S51-406	0.62	13	28	90	3.0	230	Bi (4)	590	51
NHB57S51-425	2.5	1.2	3.2	90	3.0	230	Bi (4)	590	51
NHB57S51-601	0.8	6.8	9.2	70	3.0	230	Uni (6)	590	51
NHB57S56-425	2.5	1.3	4.2	110	3.5	280	Bi (4)	680	56
NHB57S56-430	3.0	0.8	2.4	110	3.5	280	Bi (4)	680	56
NHB57S56-404	4.2	0.4	1.2	110	3.5	280	Bi (4)	680	56
NHB57S56-601	1.5	3.2	5.5	90	3.5	280	Uni (6)	680	56
NHB57S64-401	1.0	7.5	20	150	5.0	380	Bi (4)	850	64
NHB57S64-425	2.5	1.5	4.5	150	5.0	380	Bi (4)	850	64
NHB57S64-430	3.0	0.8	2.3	150	5.0	380	Bi (4)	850	64
NHB57S64-404	4.2	0.55	1.2	150	5.0	380	Bi (4)	850	64
NHB57S76-425	2.5	1.8	6.5	180	6.0	440	Bi (4)	1050	76
NHB57S76-430	3.0	1.0	3.5	180	6.0	440	Bi (4)	1050	76
NHB57S76-404	4.2	0.6	1.8	180	6.0	440	Bi (4)	1050	76
NHB57S76-601	1.5	4.5	7.8	140	6.0	440	Uni (6)	1050	76
NHB57S100-430	3.0	1.4	5.5	250	10	680	Bi (4)	1250	100
NHB57S100-404	4.2	0.8	3.0	250	10	680	Bi (4)	1250	100
NHB57S112-430	3.0	1.6	6.8	280	12	800	Bi (4)	1400	112
NHB57S112-404	4.2	0.9	3.8	280	12	800	Bi (4)	1400	112

## Mechanical Dimension



## Wiring Diagram



NEMA 23

0.9°

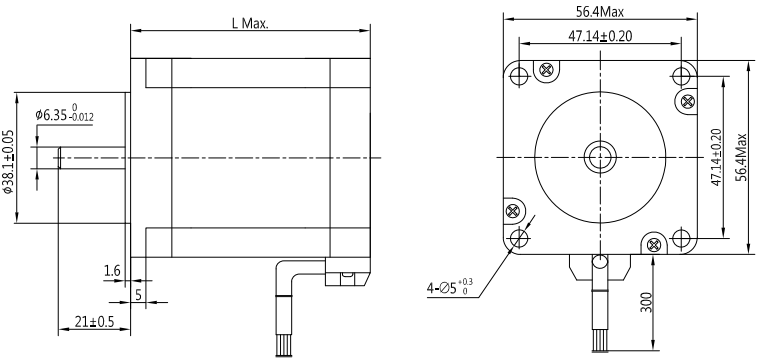
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



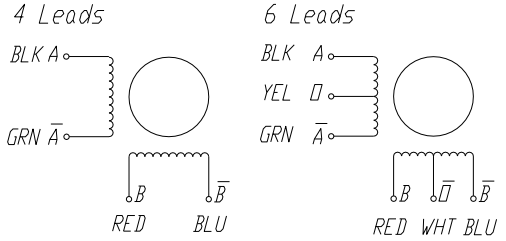
## Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB57M41-406	0.62	12	28	32	2.5	150	Bi (4)	470	41
NHB57M41-420	2.0	1.2	3.0	32	2.5	150	Bi (4)	470	41
NHB57M41-601	1.0	5.2	6.2	24	2.5	150	Uni (6)	470	41
NHB57M45-425	2.5	1.0	3.0	62	2.8	190	Bi (4)	520	45
NHB57M51-406	0.62	13	34	70	3.0	230	Bi (4)	590	51
NHB57M51-425	2.5	1.2	3.8	70	3.0	230	Bi (4)	590	51
NHB57M56-425	2.5	1.3	5.2	100	3.5	280	Bi (4)	680	56
NHB57M56-430	3.0	0.8	2.8	100	3.5	280	Bi (4)	680	56
NHB57M56-404	4.2	0.4	1.5	100	3.5	280	Bi (4)	680	56
NHB57M56-601	1.5	3.2	6.5	82	3.5	280	Uni (6)	680	56
NHB57M64-401	1.0	7.5	28	110	5.0	380	Bi (4)	850	64
NHB57M64-425	2.5	1.5	5.8	110	5.0	380	Bi (4)	850	64
NHB57M64-430	3.0	0.9	3.0	110	5.0	380	Bi (4)	850	64
NHB57M64-404	4.2	0.55	1.5	110	5.0	380	Bi (4)	850	64
NHB57M76-425	2.5	1.8	8.2	150	6.0	440	Bi (4)	1050	76
NHB57M76-430	3.0	1.0	4.3	150	6.0	440	Bi (4)	1050	76
NHB57M76-404	4.2	0.65	2.2	150	6.0	440	Bi (4)	1050	76
NHB57M76-601	1.5	4.5	10	125	6.0	440	Uni (6)	1050	76

## Mechanical Dimension



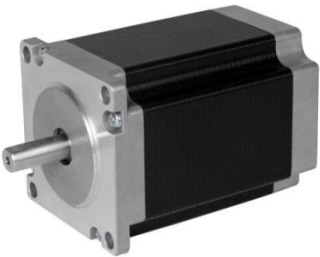
## Wiring Diagram



NEMA 23

1.2°

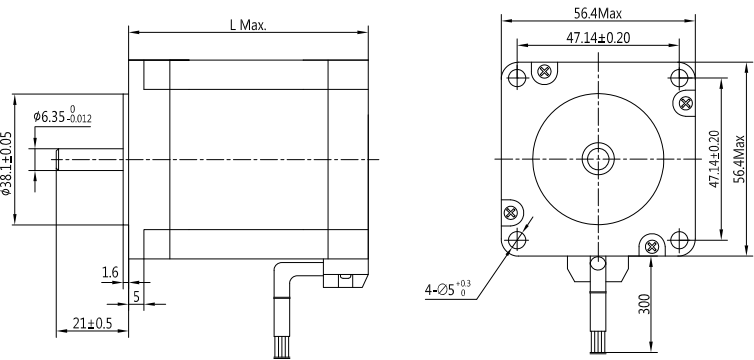
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



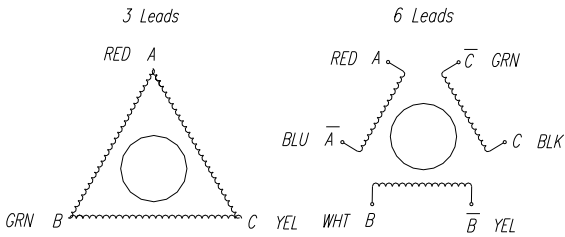
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	Pin	g	mm
NHB57T56-607	4.6	0.7	1.7	80	4.0	300	6	700	56
NHB57T78-608	5.2	0.8	1.8	150	7.0	440	6	1050	78
NHB57T80-620	3.1	0.65	2.0	160	8.0	480	6	1100	80

Mechanical Dimension



Wiring Diagram



NEMA 24

1.8°

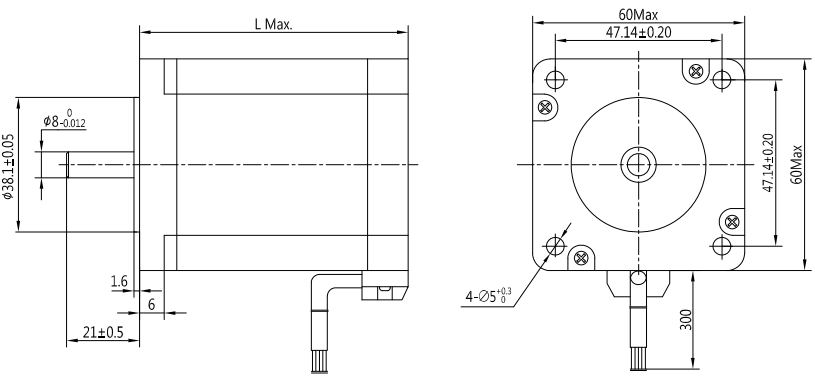
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



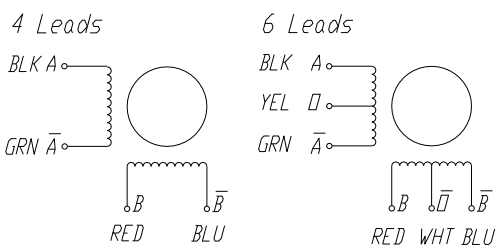
## Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHB60S41-420	2.0	1.2	2.5	64	3.0	180	Bi (4)	500	41
NHB60S45-425	2.5	1.0	2.2	85	3.5	200	Bi (4)	550	45
NHB60S51-425	2.5	1.2	3.2	140	4.0	250	Bi (4)	600	51
NHB60S56-425	2.5	1.3	4.2	160	4.0	350	Bi (4)	700	56
NHB60S56-430	3.0	0.8	2.4	160	4.0	350	Bi (4)	700	56
NHB60S56-404	4.2	0.4	1.2	160	4.0	350	Bi (4)	700	56
NHB60S64-425	2.5	1.5	4.5	180	5.0	450	Bi (4)	950	64
NHB60S64-430	3.0	0.8	2.3	180	5.0	450	Bi (4)	950	64
NHB60S64-404	4.2	0.55	1.2	180	5.0	450	Bi (4)	950	64
NHB60S76-425	2.5	1.8	6.5	220	7.0	550	Bi (4)	1150	76
NHB60S76-430	3.0	1.0	3.5	220	7.0	550	Bi (4)	1150	76
NHB60S76-404	4.2	0.6	1.8	220	7.0	550	Bi (4)	1150	76
NHB60S90-430	3.0	1.4	5.5	260	12.0	780	Bi (4)	1400	90
NHB60S90-404	4.2	0.8	3.0	260	12.0	780	Bi (4)	1400	90

## Mechanical Dimension



## Wiring Diagram



NEMA 24 1.2°

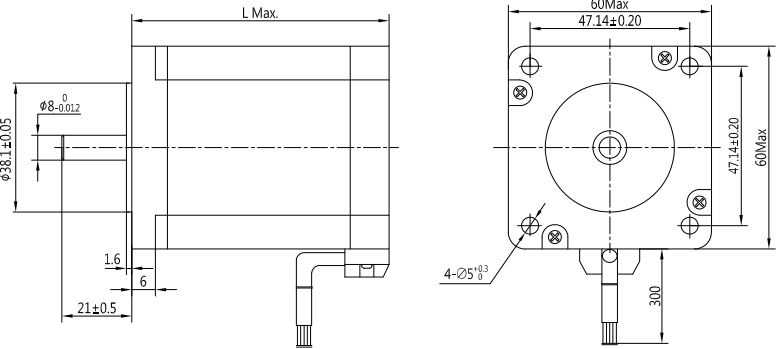
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



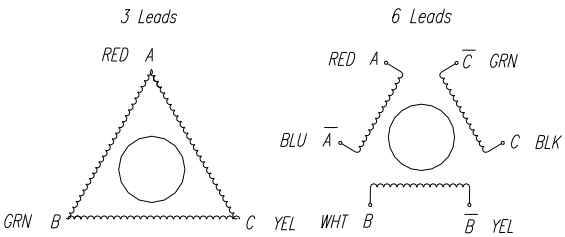
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	Pin	g	mm
NHB60T54-335	3.5	0.8	1.8	80	3.5	280	3	580	54
NHB60T54-346	4.6	0.5	0.8	80	3.5	280	3	580	54
NHB60T64-335	3.5	1.0	2.5	110	5.0	380	3	950	64
NHB60T64-346	4.6	0.7	1.2	110	5.0	380	3	950	64
NHB60T76-335	3.5	1.2	3.2	130	6.5	440	3	1150	76
NHB60T76-346	4.6	0.8	1.5	130	6.5	440	3	1150	76
NHB60T90-335	3.5	1.5	4.5	160	8.0	580	3	1400	90
NHB60T90-346	4.6	1.0	2.5	160	8.0	580	3	1400	90

Mechanical Dimension



Wiring Diagram



NEMA 24

0.72°

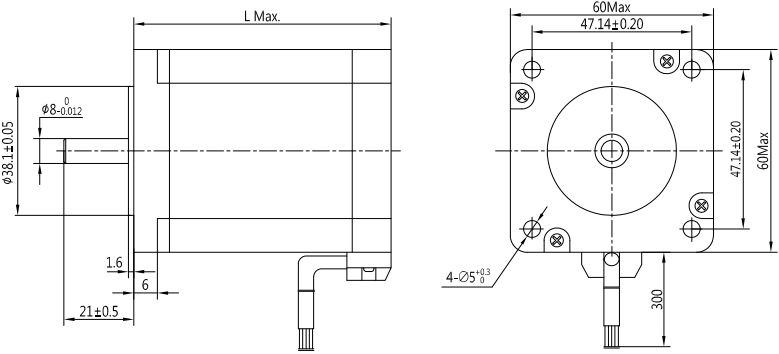
Step Angle	0.72°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



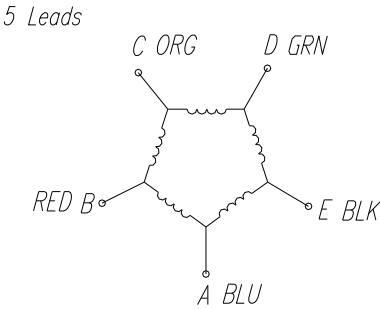
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	Pin	g	mm
NHB60F45-508	0.75	2.6	4.6	55	3.0	250	5	600	45
NHB60F45-515	1.5	0.65	0.9	55	3.0	250	5	600	45
NHB60F54-508	0.75	3.3	8.2	80	3.5	280	5	780	54
NHB60F54-515	1.5	0.77	1.6	80	3.5	280	5	780	54
NHB60F64-508	0.75	4	9.2	100	5.0	380	5	920	64
NHB60F64-515	1.5	0.8	1.8	100	5.0	380	5	920	64
NHB60F76-508	0.75	5	13.5	130	6.5	440	5	1200	76
NHB60F76-515	1.5	0.98	2.6	130	6.5	440	5	1200	76
NHB60F90-508	0.75	5.8	19.5	160	8.0	580	5	1400	90
NHB60F90-515	1.5	1.2	3.8	160	8.0	580	5	1400	90

Mechanical Dimension



Wiring Diagram

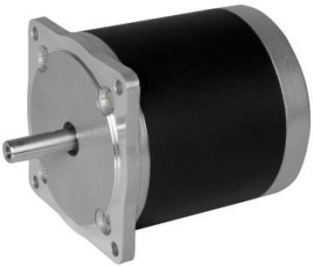


NEMA 34

1.8°

Round

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	1500VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



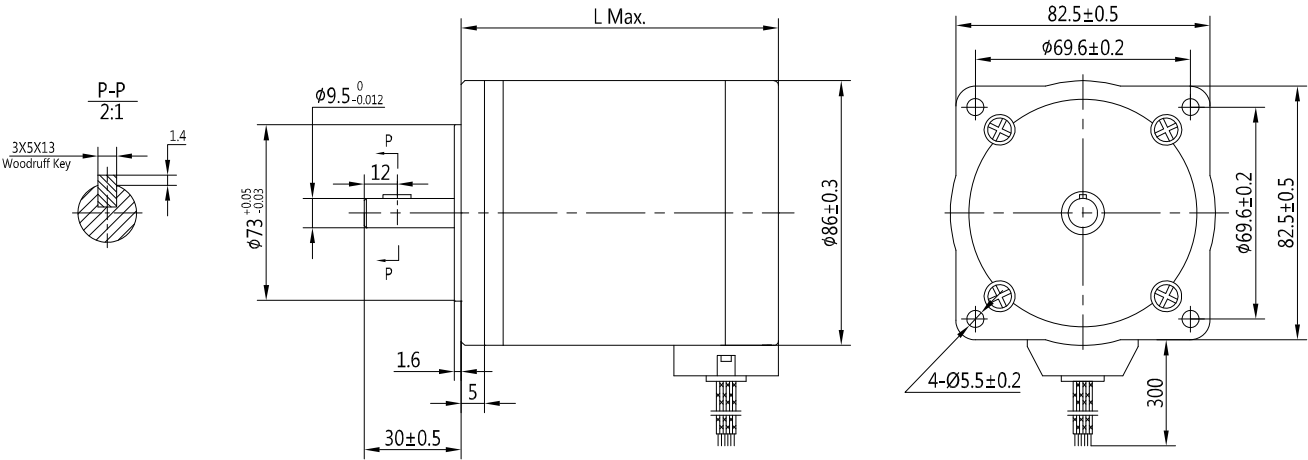
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	# of Leads	N.cm	Kg.cm <sup>2</sup>	kg	mm
NHB86K63-801	3.0	0.95	7.2	250	Bi-P (8)	4.5	0.64	1.6	63
	1.5	3.8	28.8	250	Bi-S (8)				
	2.1	1.9	7.2	180	Uni (8)				
NHB86K63-802	3.8	0.6	4.5	250	Bi-P (8)	4.5	0.64	1.6	63
	1.9	2.4	18.0	250	Bi-S (8)				
	2.7	1.2	4.5	180	Uni (8)				
NHB86K63-803	5.6	0.34	2.0	250	Bi-P (8)	4.5	0.64	1.6	63
	2.8	1.36	8.0	250	Bi-S (8)				
	4.0	0.68	2.0	180	Uni (8)				
NHB86K63-804	7.0	0.23	1.5	250	Bi-P (8)	4.5	0.64	1.6	63
	3.5	0.9	6.0	250	Bi-S (8)				
	5.0	0.45	1.5	180	Uni (8)				
NHB86K92-801	3.0	1.4	15	450	Bi-P (8)	6.5	1.30	2.6	92
	1.5	5.4	60	450	Bi-S (8)				
	2.1	2.7	15	320	Uni (8)				
NHB86K92-802	3.8	0.85	9.0	450	Bi-P (8)	6.5	1.30	2.6	92
	1.9	3.4	36.0	450	Bi-S (8)				
	2.7	1.7	9.0	320	Uni (8)				
NHB86K92-803	5.6	0.45	3.8	450	Bi-P (8)	6.5	1.30	2.6	92
	2.8	1.8	15.2	450	Bi-S (8)				
	4.0	0.9	3.8	320	Uni (8)				
NHB86K92-804	7.0	0.3	2.8	450	Bi-P (8)	6.5	1.30	2.6	92
	3.5	1.2	11.2	450	Bi-S (8)				
	5.0	0.6	2.8	320	Uni (8)				

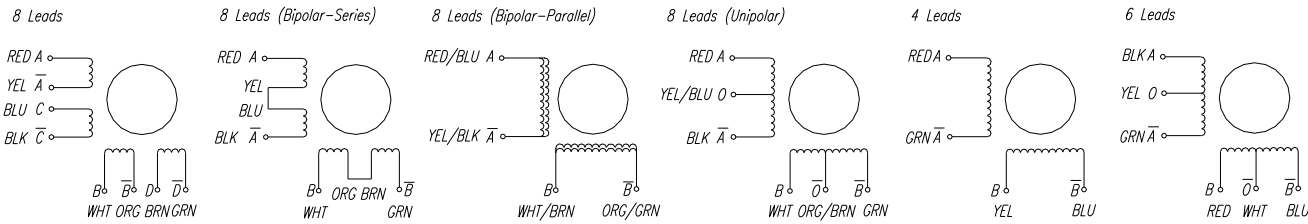
Specifications (Continued)

Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	# of Leads	N.cm	kg.cm <sup>2</sup>	kg	mm
NHB86K122-802	3.8	1.25	12.5	630	Bi-P (8)	10.5	1.90	3.8	122
	1.9	5.0	50	630	Bi-S (8)				
	2.7	2.5	12.5	450	Uni (8)				
NHB86K122-803	5.6	0.55	5.6	630	Bi-P (8)	10.5	1.90	3.8	122
	2.8	2.2	22.4	630	Bi-S (8)				
	4.0	1.1	5.6	450	Uni (8)				
NHB86K122-804	7.0	0.4	3.6	630	Bi-P (8)	10.5	1.90	3.8	122
	3.5	1.6	14.4	630	Bi-S (8)				
	5.0	0.8	3.6	450	Uni (8)				

Mechanical Dimension



Wiring Diagram



NEMA 34

1.8°

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



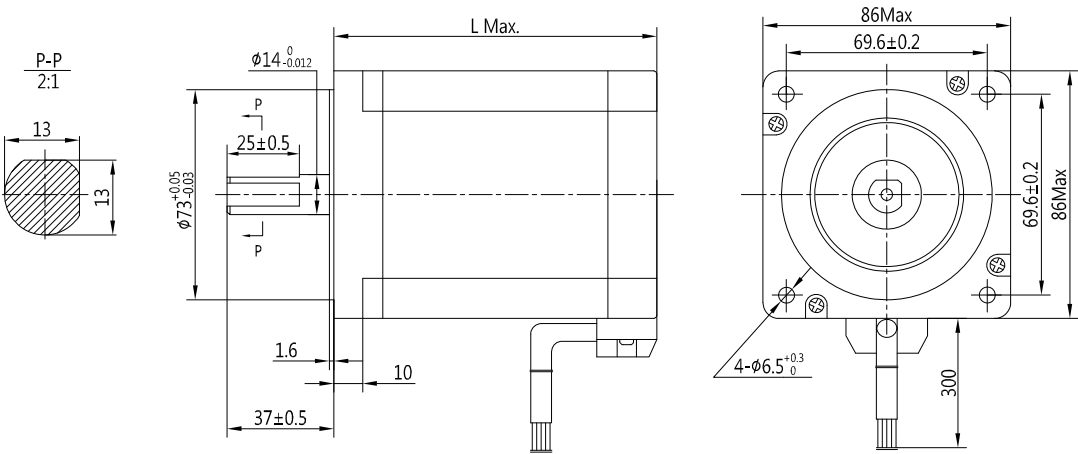
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	# of Leads	N.cm	kg.cm <sup>2</sup>	kg	mm
NHB86S66-801	3.8	0.6	3.5	310	Bi-P (8)	5.5	0.85	2.0	66
	1.9	2.4	14.0	310	Bi-S (8)				
	2.7	1.2	3.5	220	Uni (8)				
NHB86S66-802	5.6	0.3	1.6	310	Bi-P (8)	5.5	0.85	2.0	66
	2.8	1.2	6.4	310	Bi-S (8)				
	4.0	0.6	1.6	220	Uni (8)				
NHB86S66-803	7.0	0.2	1.0	310	Bi-P (8)	5.5	0.85	2.0	66
	3.5	0.8	4.0	310	Bi-S (8)				
	5.0	0.4	1.0	220	Uni (8)				
NHB86S78-801	3.8	0.8	5.6	420	Bi-P (8)	6.5	1.05	2.5	78
	1.9	3.2	22.4	420	Bi-S (8)				
	2.7	1.6	5.6	300	Uni (8)				
NHB86S78-802	5.6	0.35	3.0	420	Bi-P (8)	6.5	1.05	2.5	78
	2.8	1.4	12.0	420	Bi-S (8)				
	4.0	0.7	3.0	300	Uni (8)				
NHB86S78-803	7.0	0.25	1.8	420	Bi-P (8)	6.5	1.05	2.5	78
	3.5	1.0	7.2	420	Bi-S (8)				
	5.0	0.5	1.8	300	Uni (8)				
NHB86S98-801	3.8	0.95	8.6	650	Bi-P (8)	9.5	1.55	3.0	98
	1.9	3.8	34.4	650	Bi-S (8)				
	2.7	1.9	8.6	490	Uni (8)				
NHB86S98-802	5.6	0.5	4.1	650	Bi-P (8)	9.5	1.55	3.0	98
	2.8	2.0	16.4	650	Bi-S (8)				
	4.0	1.0	4.1	490	Uni (8)				
NHB86S98-803	7.0	0.32	2.4	650	Bi-P (8)	9.5	1.55	3.0	98
	3.5	1.3	9.6	650	Bi-S (8)				
	5.0	0.65	2.4	490	Uni (8)				

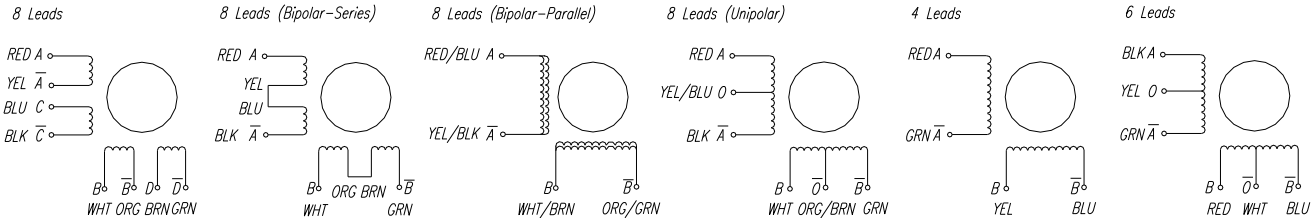
## Specifications (Continued)

Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	# of Leads	N.cm	kg.cm <sup>2</sup>	kg	mm
NHB86S114-801	3.8	1.0	11.5	820	Bi-P (8)	12.5	1.80	4.0	114
	1.9	4.0	46	820	Bi-S (8)				
	2.7	2.0	11.5	580	Uni (8)				
NHB86S114-802	5.6	0.55	5.5	820	Bi-P (8)	12.5	1.80	4.0	114
	2.8	2.2	22.0	820	Bi-S (8)				
	4.0	1.1	5.5	580	Uni (8)				
NHB86S114-803	7.0	0.4	3.2	820	Bi-P (8)	12.5	1.80	4.0	114
	3.5	1.5	12.8	820	Bi-S (8)				
	5.0	0.75	3.2	580	Uni (8)				
NHB86S126-801	3.8	1.25	12.5	900	Bi-P (8)	18.5	2.20	4.5	126
	1.9	5.0	50	900	Bi-S (8)				
	2.7	2.5	12.5	640	Uni (8)				
NHB86S126-802	5.6	0.65	5.8	900	Bi-P (8)	18.5	2.20	4.5	126
	2.8	2.6	23.2	900	Bi-S (8)				
	4.0	1.3	5.8	640	Uni (8)				
NHB86S126-803	7.0	0.43	3.4	900	Bi-P (8)	18.5	2.20	4.5	126
	3.5	1.7	13.6	900	Bi-S (8)				
	5.0	0.85	3.4	640	Uni (8)				
NHB86S150-801	3.8	1.5	17.5	1200	Bi-P (8)	24.5	2.50	5.0	150
	1.9	5.8	70	1200	Bi-S (8)				
	2.7	2.9	17.5	850	Uni (8)				
NHB86S150-802	5.6	0.7	9.2	1200	Bi-P (8)	24.5	2.50	5.0	150
	2.8	2.8	36.8	1200	Bi-S (8)				
	4.0	1.4	9.2	850	Uni (8)				
NHB86S150-803	7.0	0.45	5.2	1200	Bi-P (8)	24.5	2.50	5.0	150
	3.5	1.8	20.8	1200	Bi-S (8)				
	5.0	0.9	5.2	850	Uni (8)				

## Mechanical Dimension

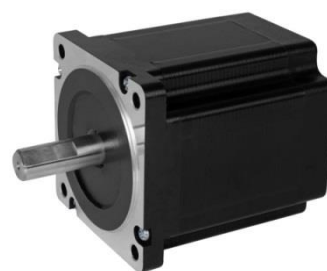


## Wiring Diagram



NEMA 34

0.9°

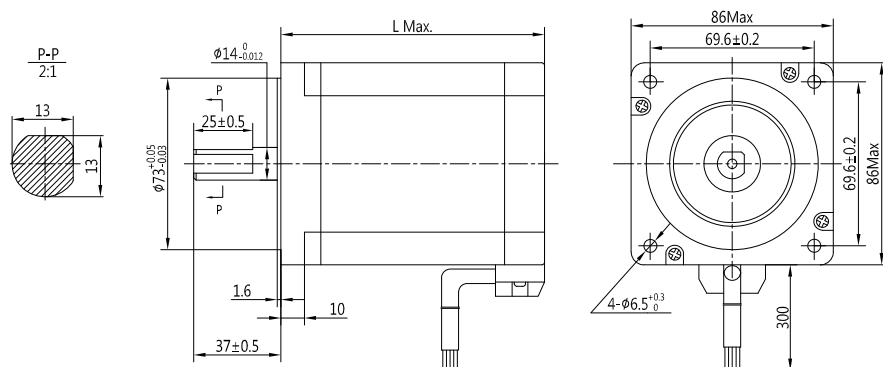


Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

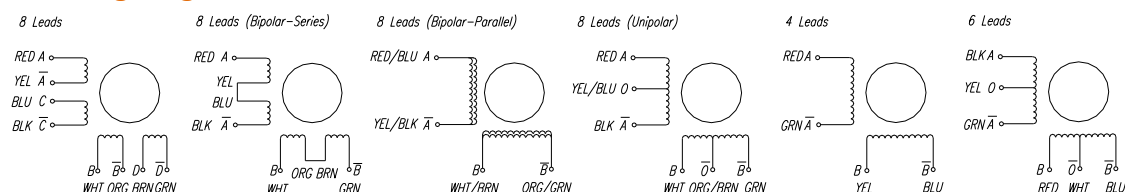
### Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	kg.cm <sup>2</sup>	# of Leads	kg	mm
NHB86M66-801	2.7	1.2	3.5	200	5.0	0.85	Uni (8)	2.0	66
NHB86M66-802	4.0	0.6	1.6	200	5.0	0.85	Uni (8)	2.0	66
NHB86M66-803	5.0	0.4	1.0	200	5.0	0.85	Uni (8)	2.0	66
NHB86M78-801	2.7	1.6	5.6	270	5.8	1.05	Uni (8)	2.5	78
NHB86M78-802	4.0	0.7	3.0	270	5.8	1.05	Uni (8)	2.5	78
NHB86M78-803	5.0	0.5	1.8	270	5.8	1.05	Uni (8)	2.5	78
NHB86M98-801	2.7	1.9	8.6	450	8.5	1.55	Uni (8)	3.0	98
NHB86M98-802	4.0	1.0	4.1	450	8.5	1.55	Uni (8)	3.0	98
NHB86M98-803	5.0	0.65	2.4	450	8.5	1.55	Uni (8)	3.0	98
NHB86M114-801	2.7	2.0	11.5	520	11.0	1.80	Uni (8)	4.0	114
NHB86M114-802	4.0	1.1	5.5	520	11.0	1.80	Uni (8)	4.0	114
NHB86M114-803	5.0	0.75	3.2	520	11.0	1.80	Uni (8)	4.0	114
NHB86M126-801	2.7	2.5	12.5	580	16.5	2.20	Uni (8)	4.5	126
NHB86M126-802	4.0	1.3	5.8	580	16.5	2.20	Uni (8)	4.5	126
NHB86M126-803	5.0	0.85	3.4	580	16.5	2.20	Uni (8)	4.5	126
NHB86M150-801	2.7	2.9	17.5	780	20.5	2.50	Uni (8)	5.0	150
NHB86M150-802	4.0	1.4	9.2	780	20.5	2.50	Uni (8)	5.0	150
NHB86M150-803	5.0	0.9	5.2	780	20.5	2.50	Uni (8)	5.0	150

### Mechanical Dimension



### Wiring Diagram



NEMA 34

1.2°

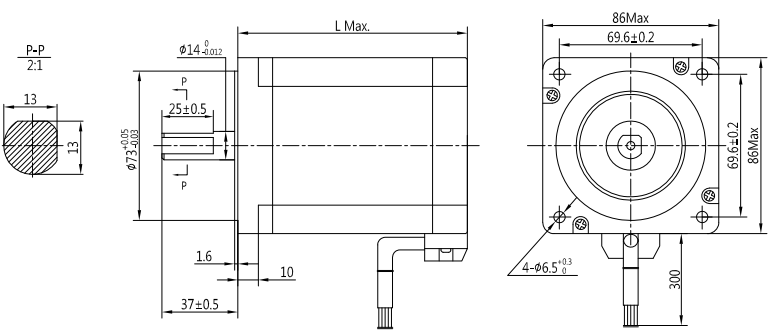
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



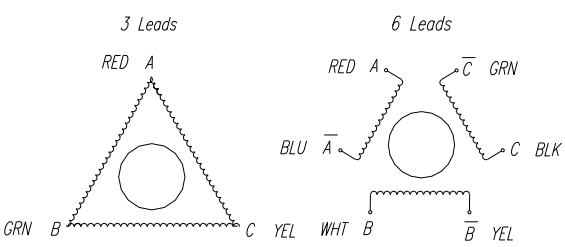
## Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	kg.cm <sup>2</sup>	Pin	kg	mm
NHB86T66-335	3.5	1.2	2.5	210	3.5	0.85	3	2.0	66
NHB86T66-345	4.5	0.7	1.5	210	3.5	0.85	3	2.0	66
NHB86T66-368	6.8	0.3	0.65	210	3.5	0.85	3	2.0	66
NHB86T78-335	3.5	1.6	5.0	270	5.8	1.05	3	2.5	78
NHB86T78-345	4.5	1.0	3.0	270	5.8	1.05	3	2.5	78
NHB86T78-368	6.8	0.42	1.3	270	5.8	1.05	3	2.5	78
NHB86T98-335	3.5	2.5	6.5	450	8.5	1.55	3	3.0	98
NHB86T98-345	4.5	1.4	3.9	450	8.5	1.55	3	3.0	98
NHB86T98-368	6.8	0.6	1.7	450	8.5	1.55	3	3.0	98
NHB86T114-335	3.5	3.1	8.2	520	11.0	1.80	3	4.0	114
NHB86T114-345	4.5	1.8	4.8	520	11.0	1.80	3	4.0	114
NHB86T114-368	6.8	0.75	2.1	520	11.0	1.80	3	4.0	114
NHB86T126-335	3.5	3.5	9.8	580	16.5	2.20	3	4.5	126
NHB86T126-345	4.5	2.1	6.2	580	16.5	2.20	3	4.5	126
NHB86T126-368	6.8	0.9	2.6	580	16.5	2.20	3	4.5	126
NHB86T150-335	3.5	4.5	13.2	780	20.5	2.5	3	5.0	150
NHB86T150-345	4.5	2.6	8.2	780	20.5	2.5	3	5.0	150
NHB86T150-368	6.8	1.1	3.5	780	20.5	2.5	3	5.0	150

## Mechanical Dimension



## Wiring Diagram



NEMA 34

0.72°

Round

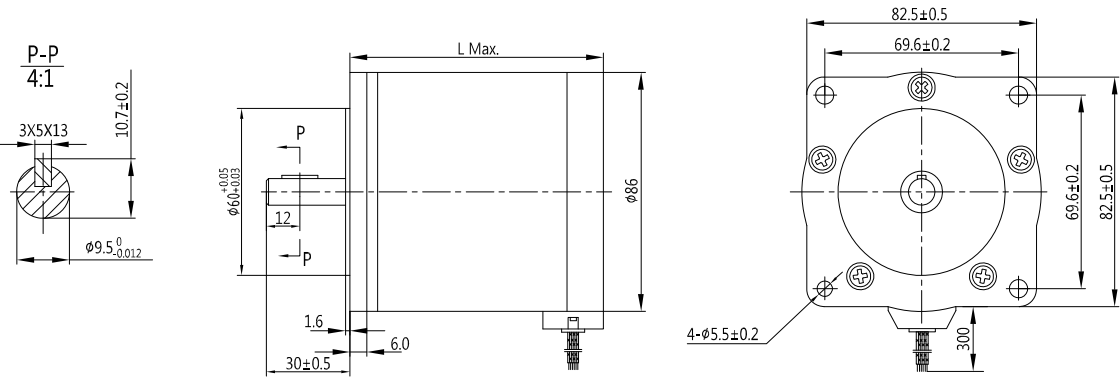
Step Angle	0.72°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



## Specifications

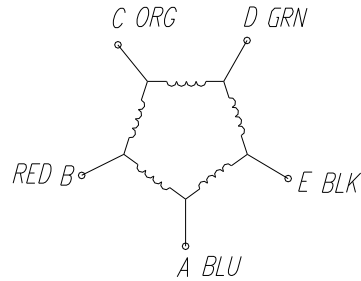
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	kg.cm <sup>2</sup>	Pin	kg	mm
NHB86F63-508	0.8	5.5	24	180	4.5	0.64	5	1.6	63
NHB86F63-515	1.5	1.5	5.6	180	4.5	0.64	5	1.6	63
NHB86F92-515	1.5	2.0	11	320	6.5	1.30	5	2.6	92
NHB86F122-515	1.5	2.5	12	450	10.5	1.90	5	3.8	122

## Mechanical Dimension



## Wiring Diagram

5 Leads



NEMA 42

1.8°

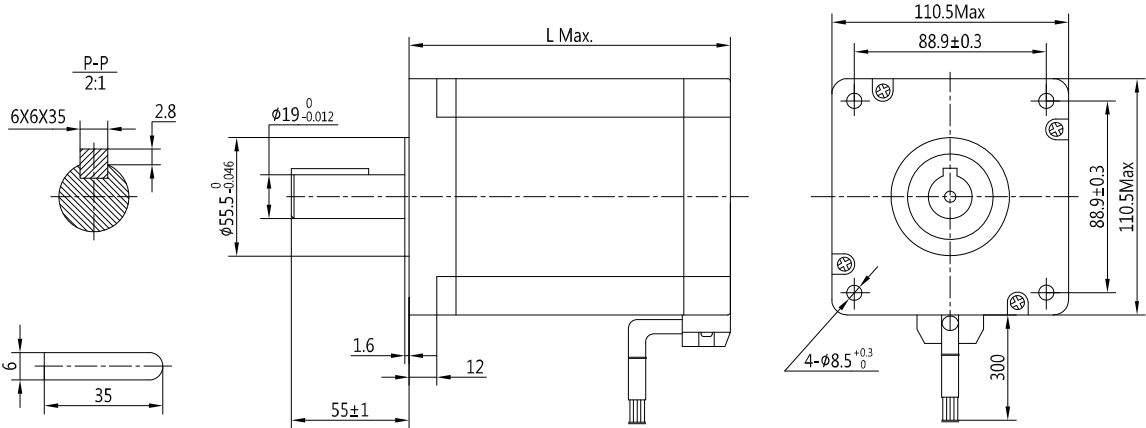
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	1800VAC, 1s, 5mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



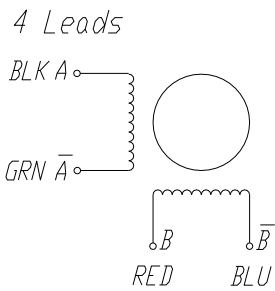
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.m	N.cm	kg.cm <sup>2</sup>	# of Leads	Kg	mm
NHB110S100-460	6.0	0.5	6.0	12.0	20.5	4.0	Bi (4)	5.0	100
NHB110S117-460	6.0	0.57	7.5	15.0	24.5	6.0	Bi (4)	5.8	117
NHB110S126-460	6.0	0.66	10.5	18.0	28.5	9.0	Bi (4)	6.8	126
NHB110S150-460	6.0	0.8	13.5	22.0	35.5	11.0	Bi (4)	8.4	150
NHB110S165-460	6.0	0.87	16.0	26.0	45.5	13.0	Bi (4)	9.3	165
NHB110S200-460	6.0	1.1	22.0	29.0	65.5	25.0	Bi (4)	12.0	200
NHB110S200-480	8.0	0.65	13.5	29.0	65.5	25.0	Bi (4)	12.0	200

Mechanical Dimension



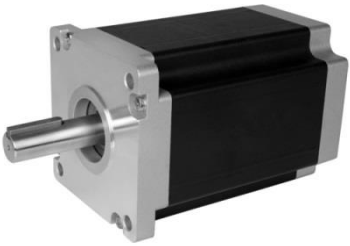
Wiring Diagram



NEMA 42

1.2°

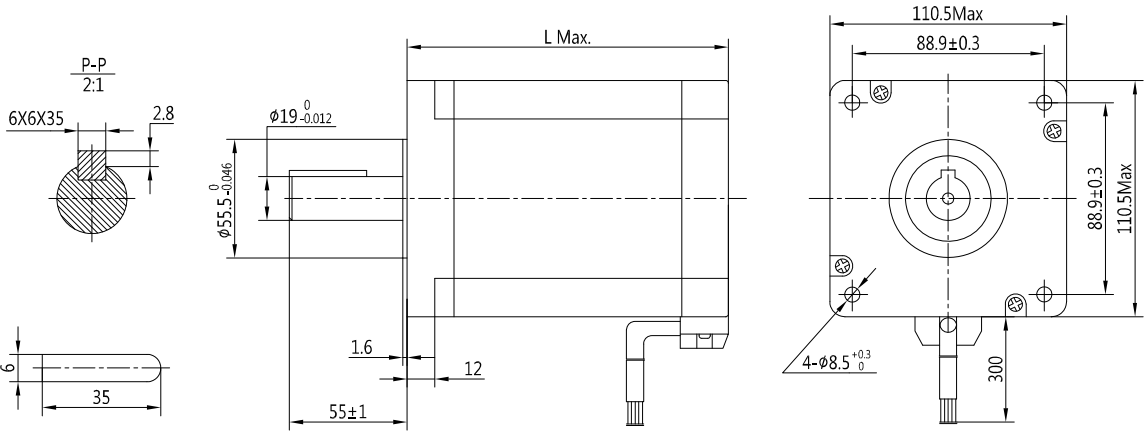
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	1800VAC, 1s, 5mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



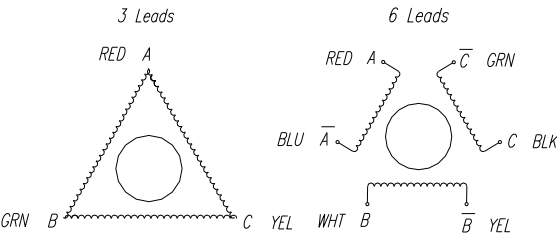
## Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/φ	Ω/φ	mH/φ	N.m	N.cm	kg.cm <sup>2</sup>	Pin	kg	mm
NHB110T126-360	6.0	0.8	6.0	11.0	28.5	9.0	3	6.8	126
NHB110T150-360	6.0	1.0	8.0	12.5	35.5	11.0	3	8.4	150
NHB110T165-360	6.0	1.2	9.5	14.0	45.5	13.0	3	9.3	165
NHB110T200-360	6.0	1.45	13.2	15.5	65.5	25.0	3	12.0	200

## Mechanical Dimension



## Wiring Diagram



## Custom Design

Novara has an engineering team with many years of experience in motor design and application engineering. We have solved numerous complex motion control problems with both standard and customized solutions. If your application demands something unusual or unique, we can engineer a design to optimize the product's performance for your needs.



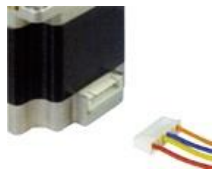
## Multiple Shaft Options

- Single or Dual
- Pulley
- D-cut
- Hollow
- Knurl.....



### Multiple Lead Wire Options

- Custom color code
- Heat shrink tube
- Flying or bundled
- Pins
- Connectors .....



## Lead Wire Connectors

- Molex
- Tyco/AMP
- Woodhead
- Cvilux.....



## Custom Winding

- Custom windings can be provided, based on your application's needs



## Bearings and Lubricants

- Ball bearings
- Stainless steel bearings
- Seals
- Special lubricants for high temperature.....



### Value added Assemblies

- Encoder
- Gearhead
- Brake
- Higher IP.....



## Custom Housing

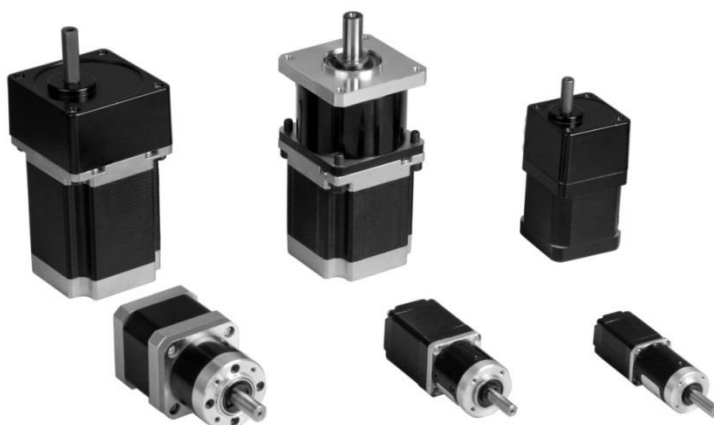
- Specific motors can be provided to meet your environmental, mechanical, and dimensional requirements

# Yours...

- Any specific requirements of custom design products?  
Novara can do more for you!

B

## *NHG Series Hybrid Stepper Gear Motor*



Description	B-1
Applications	B-1
Part Number	B-1
Standard Versions	B-2
NHG20Y/NTP22E	B-3
NHG28Y/NTP28E	B-4
NHG35Y/NTP36E	B-5
NHG39Y/NTP36E	B-6
NHG42S/NTP36E	B-7
NHG42S/NTP42E	B-8
NHG42S/NTP42F	B-9
NHG57K/NTP56E	B-10
NHG57S/NTP56E	B-11
NHG42S/NSG42	B-12
NHG57S/NSG60	B-13
NHG86S/NSG90	B-14
NHG86S/NSG104	B-15

## Description

Novara's NHG series hybrid stepper gear motor offers a wide range of gear ratios to fulfill your project needs. The planetary gearhead (transmission series) and spur gearbox have been strictly tested to ensure long life and maximum efficiency. They are low-cost solutions and can perfectly meet your needs of motion or automation control. Besides, high precision gearhead, custom motor winding and gearbox specs are also available.

## Applications

Novara's NHG series hybrid stepper gear motors are widely used in much of today's robotic equipment, laboratory instrumentation, machinery automation, analytical equipment, computer peripherals, semiconductor industries, and other applications that require precision motion.

## Part Number (Motor Part)

<b>NHG</b>					
<b>Novara Hybrid Stepper Gearmotor</b>	<b>Motor Frame Size</b> (O.D. in mm)	<b>Step Angle</b> Y: 1.8°, Square, small rotor S: 1.8°, Square, middle/large rotor K: 1.8°, round	<b>Motor Length</b> (mm)	<b>Lead Wires</b> 4/6/8	<b>Motor Electric &amp; Mechanical Variation</b> Variety of current, rear shaft (if any), etc

## Part Number (Planetary Gearhead Part)

<b>NTP</b>					
<b>Novara Transmission series Planetary Gearhead</b>	<b>Frame Size</b> (O.D. in mm)	<b>Gearhead Type</b> S: Standard Type E: Enhanced Type L: Long Lifetime Type T: High Torque Type F: Long Lifetime & High Torque Type	<b>Mounting Plate Type</b> Blank: Round mounting plate S: Square mounting plate	<b>Max. Rated Admissible Torque</b> 05: 0.5N.m 10: 1.0N.m .....	<b>Reduction Ratio</b> R30: 1:3 R36: 1:3.6 .....

## Part Number (Spur Gearbox Part)

<b>NSG</b>			
<b>Novara Spur Gearbox</b>	<b>Frame Size</b> (O.D. in mm)	<b>Gear Type</b> GN: Ordinary Helical Gear GU: Enhanced Helical Gear	<b>Reduction Ratio</b> R30: 1:3 R36: 1:3.6 .....

## Standard Versions

### Stepper Motors with Planetary Gearheads

Gearmotor Model	Stepper Motor		Planetary Gearhead		
	Frame Size	Body Length	Type	Frame Size	Rated Admissible Torque
NHG20Y/NTP22E	□20mm	28, 34, 40mm	Planetary, Enhanced type	Ø22mm	0.6 N.m ~ 2.0 N.m
NHG28Y/NTP28E	□28mm	33, 41, 50mm	Planetary, Enhanced type	Ø28mm	1.2 N.m ~ 4.0 N.m
NHG35Y/NTP36E	□35mm	28, 34mm	Planetary, Enhanced type	Ø36mm	1.8 N.m ~ 6.0 N.m
NHG39Y/NTP36E	□39mm	20, 34, 40mm	Planetary, Enhanced type	Ø36mm	1.8 N.m ~ 6.0 N.m
NHG42S/NTP36E	□42mm	28, 34mm	Planetary, Enhanced type	Ø36mm	1.8 N.m ~ 6.0 N.m
NHG42S/NTP42E	□42mm	34, 40mm	Planetary, Enhanced type	Ø42mm	3 N.m ~ 10.0 N.m
NHG42S/NTP42F	□42mm	40, 48mm	Planetary, Long lifetime type	Ø42mm	6 N.m ~ 20.0 N.m
NHG57K/NTP56E	Ø57mm	41, 51, 56mm	Planetary, Enhanced type	Ø56mm	9 N.m ~ 30.0 N.m
NHG57S/NTP56E	□57mm	41, 51, 56mm	Planetary, Enhanced type	Ø56mm	9 N.m ~ 30.0 N.m

### Stepper Motors with Spur Gearboxes

Gearmotor Model	Stepper Motor		Spur Gearbox	
	Frame Size	Body Length	Type	Frame Size
NHG42S/NSG42	□42mm	34, 40, 48mm	Spur, GN type	□42mm
NHG57S/NSG60	□57mm	41~76mm	Spur, GN type	□60mm
NHG86S/NSG90	□86mm	66, 78, 98mm	Spur, GN/GU type	□90mm
NHG86S/NSG104	□86mm	66, 78, 98mm	Spur, GU type	□104mm



NEMA 8 (□20mm)  
Hybrid Stepper Motor

Ø22mm Planetary Gearhead  
Enhanced Type

Rated Admissible Torque  
0.6 N.m ~ 2.0 N.m

Motor Specifications

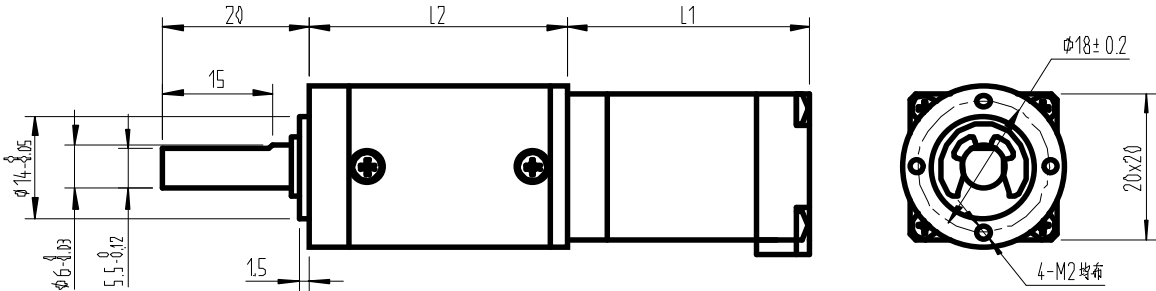
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG20Y28-406	0.6	3.2	0.9	1.4	0.2	2.5	Bi (4)	50	28	1:369
NHG20Y34-406	0.6	4.5	1.2	1.8	0.3	3.2	Bi (4)	70	34	1:369
NHG20Y40-406	0.6	5.8	1.6	2.6	0.5	4.5	Bi (4)	82	40	1:264

Gearhead Specifications

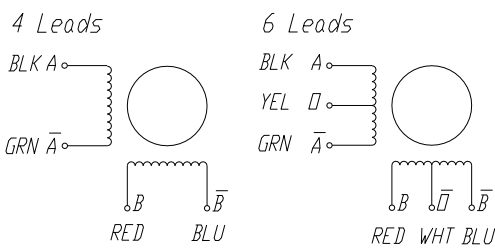
Model	NTP22ES20-□□□-D6F20 (Output shaft: Ø6mm, Len/20mm, Flat 1X15mm)											
Reduction Ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369
Exact Reduction Ratio	3.71	5.18	13.76	19.22	26.83	51.06	71.30	99.55	138.99	189.45	264.52	369.3
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4		
Transmission Efficiency	90%		81%			73%				66%		
Rated Admissible Torque	0.6N.m		1.0N.m			1.6N.m				2.0N.m		
Max Momentary Admissible Torque	1.8N.m		3.0N.m			4.8N.m				6.0N.m		
Gearhead's Housing Length (L2)	24.4mm		33.0mm			41.5mm				49.8mm		
Weight	35g		45g			55g				65g		
Housing Material	Metal											
Bearing at Output	Sleeve Bearings											
Backlash	≤ 1.5°, at no-load											
Max Radial Load	12N (10 mm from the flange)											
Max Axial Load	7N											
Shaft Radial Play	≤ 0.04mm											
Shaft Axial Play	≤ 0.3mm											

Note: Please specify the required gear ratio with the blank box when ordering models.

Mechanical Dimension



Wiring Diagram



NEMA 11 (□28mm)  
Hybrid Stepper Motor

Ø28mm Planetary Gearhead  
Enhanced Type

Rated Admissible Torque  
1.2 N.m ~ 4.0 N.m



Motor Specifications

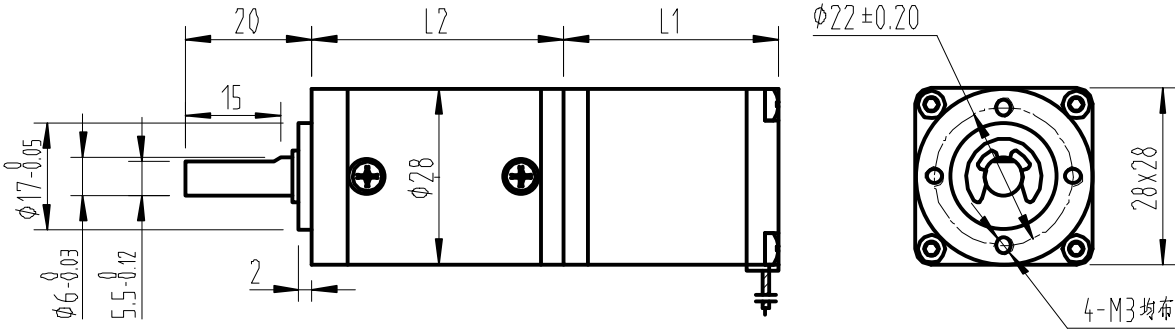
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG28Y33-406	0.6	5.5	3.2	6.0	0.4	8	Bi (4)	110	33	1:264
NHG28Y41-406	0.6	7.0	6.0	8.0	0.5	11	Bi (4)	140	41	1:189
NHG28Y50-406	0.6	9.0	7.2	10.0	0.8	13	Bi (4)	180	50	1:100

Gearhead Specifications

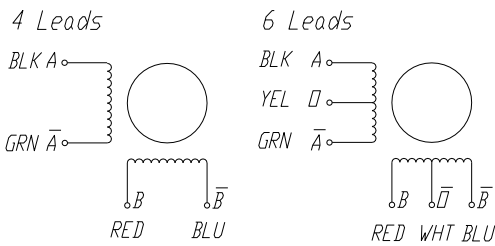
Model	NTP28ES40-□□□-D6F20 (Output shaft: Ø6mm, Len/20mm, Flat 1X15mm)											
Reduction Ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369
Exact Reduction Ratio	3.71	5.18	13.76	19.22	26.83	51.06	71.30	99.55	138.99	189.45	264.52	369.32
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4		
Transmission Efficiency	90%		81%			73%				66%		
Rated Admissible Torque	1.2N.m		2.0N.m			3.2N.m				4.0N.m		
Max Momentary Admissible Torque	3.6N.m		6.0N.m			9.6N.m				12.0N.m		
Gearhead's Housing Length (L2)	31.0mm		40.1mm			49.0mm				57.9mm		
Weight	60g		85g			95g				110g		
Housing Material	Metal											
Bearing at Output	Sleeve Bearings											
Backlash	≤ 1.5°, at no-load											
Max Radial Load	12N (10 mm from the flange)											
Max Axial Load	7N											
Shaft Radial Play	≤ 0.04mm											
Shaft Axial Play	≤ 0.3mm											

Note: Please specify the required gear ratio with the blank box when ordering models.

Mechanical Dimension



Wiring Diagram



NEMA 14 (□35mm)  
Hybrid Stepper Motor

Ø36mm Planetary Gearhead  
Enhanced Type

Rated Admissible Torque  
1.8 N.m ~ 6.0 N.m



### Motor Specifications

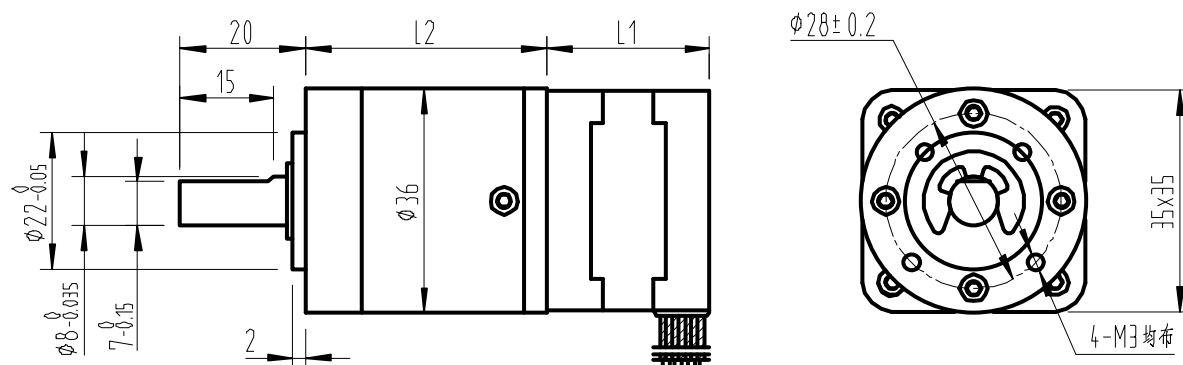
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/φ	Ω/φ	mH/φ	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG35Y28-420	0.46	20	14	12	0.8	11	Bi (4)	120	28	1:264
NHG35Y28-408	0.8	5.0	5.0	12	0.8	11	Bi (4)	120	28	1:264
NHG35Y34-425	0.42	25	32	18	1.0	13	Bi (4)	160	34	1:189
NHG35Y34-408	0.8	6.5	9.8	18	1.0	13	Bi (4)	160	34	1:189

### Gearhead Specifications

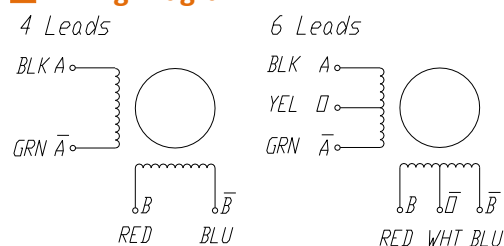
Model	NTP36ES60-□□□-D8F20 (Output shaft: Ø8mm, Len/20mm, Flat 1X15mm)												
Reduction Ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	
Exact Reduction Ratio	3.71	5.18	13.76	19.22	26.83	51.06	71.30	99.55	138.99	189.45	264.52	369.32	
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4			
Transmission Efficiency	90%		81%			73%				66%			
Rated Admissible Torque	1.8N.m		3.0N.m			4.8N.m				6.0N.m			
Max Momentary Admissible Torque	5.4N.m		9.0N.m			14.4N.m				18.0N.m			
Gearhead’s Housing Length (L2)	31.0mm		38.5mm			48.2mm				55.4mm			
Weight	195g		210g			290g				315g			
Housing Material	Metal												
Bearing at Output	Sleeve Bearings												
Backlash	≤ 1.5°, at no-load												
Max Radial Load	35N (10 mm from the flange)												
Max Axial Load	25N												
Shaft Radial Play	≤ 0.04mm												
Shaft Axial Play	≤ 0.3mm												

Note: Please specify the required gear ratio with the blank box when ordering models.

### Mechanical Dimension



### Wiring Diagram





NEMA 16 (□39mm)  
Hybrid Stepper Motor

Ø36mm Planetary Gearhead  
Enhanced Type

Rated Admissible Torque  
1.8 N.m ~ 6.0 N.m

Motor Specifications

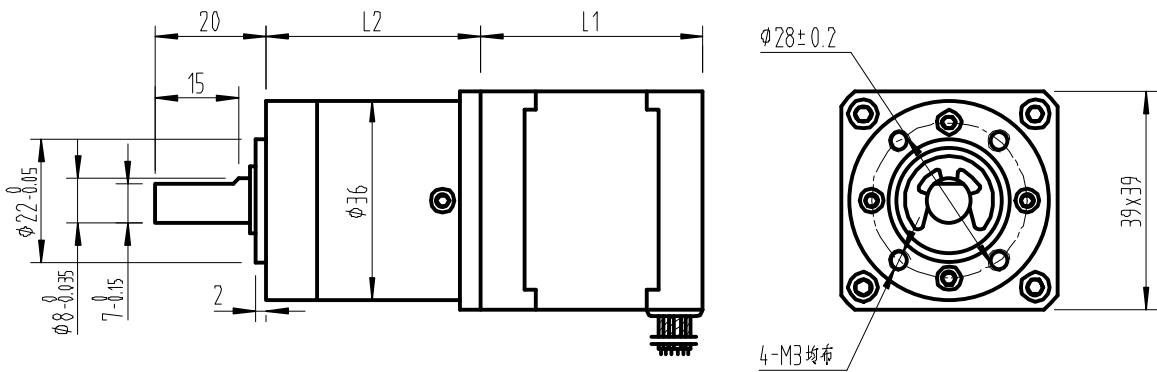
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG39Y20-401	0.4	18	12	8	0.5	12	Bi (4)	100	20	1:369
NHG39Y34-401	0.6	12	13	18	1.0	19	Bi (4)	160	34	1:71
NHG39Y34-402	1.2	3.2	3.0	18	1.0	19	Bi (4)	160	34	1:71
NHG39Y34-630	0.4	30	14	12	1.0	19	Uni (6)	160	34	1:189
NHG39Y40-401	0.6	12	20	24	1.2	24	Bi (4)	210	40	1:51
NHG39Y40-402	1.2	3.8	6.5	24	1.2	24	Bi (4)	210	40	1:51
NHG39Y40-630	0.4	30	22	18	1.2	24	Uni (6)	210	40	1:100

Gearhead Specifications

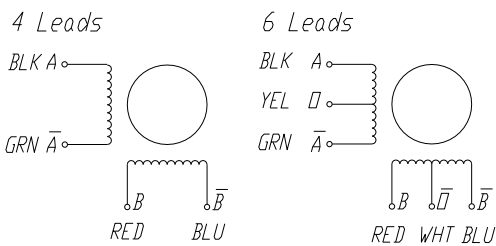
Model	NTP36ES60-□□□-D8F20 (Output shaft: Ø8mm, Len/20mm, Flat 1X15mm)											
Reduction Ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369
Exact Reduction Ratio	3.71	5.18	13.76	19.22	26.83	51.06	71.30	99.55	138.99	189.45	264.52	369.32
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4		
Transmission Efficiency	90%		81%			73%				66%		
Rated Admissible Torque	1.8N.m		3.0N.m			4.8N.m				6.0N.m		
Max Momentary Admissible Torque	5.4N.m		9.0N.m			14.4N.m				18.0N.m		
Gearhead's Housing Length (L2)	31.0mm		38.5mm			48.2mm				55.4mm		
Weight	195g		210g			290g				315g		
Housing Material	Metal											
Bearing at Output	Sleeve Bearings											
Backlash	≤ 1.5°, at no-load											
Max Radial Load	35N (10 mm from the flange)											
Max Axial Load	25N											
Shaft Radial Play	≤ 0.04mm											
Shaft Axial Play	≤ 0.3mm											

Note: Please specify the required gear ratio with the blank box when ordering models.

Mechanical Dimension



Wiring Diagram



NEMA 17 (□42mm)  
Hybrid Stepper Motor

Ø36mm Planetary Gearhead  
Enhanced Type

Rated Admissible Torque  
1.8 N.m ~ 6.0 N.m



### Motor Specifications

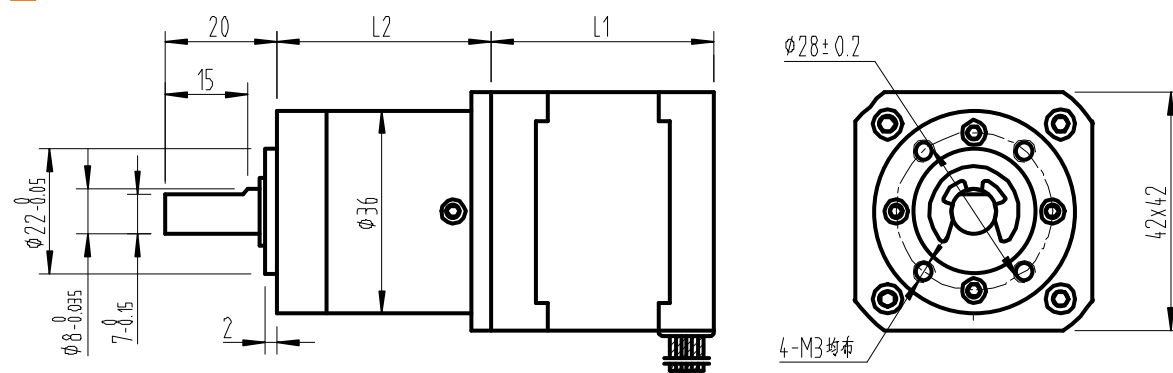
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG42S28-406	0.6	8.0	10	12	1.2	30	Bi (4)	150	28	1:100
NHG42S34-401	1.3	2.4	2.8	28	1.6	34	Bi (4)	220	34	1:71
NHG42S34-402	1.7	1.2	1.8	28	1.6	34	Bi (4)	220	34	1:71
NHG42S34-630	0.4	30	18	21	1.6	34	Uni (6)	220	34	1:100

### Gearhead Specifications

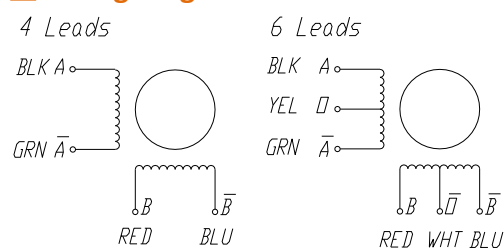
Model	NTP36ES60-□□□-D8F20 (Output shaft: Ø8mm, Len/20mm, Flat 1X15mm)											
Reduction Ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369
Exact Reduction Ratio	3.71	5.18	13.76	19.22	26.83	51.06	71.30	99.55	138.99	189.45	264.52	369.32
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4		
Transmission Efficiency	90%		81%			73%				66%		
Rated Admissible Torque	1.8N.m		3.0N.m			4.8N.m				6.0N.m		
Max Momentary Admissible Torque	5.4N.m		9.0N.m			14.4N.m				18.0N.m		
Gearhead’s Housing Length (L2)	31.0mm		38.5mm			48.2mm				55.4mm		
Weight	195g		210g			290g				315g		
Housing Material	Metal											
Bearing at Output	Sleeve Bearings											
Backlash	≤ 1.5°, at no-load											
Max Radial Load	35N (10 mm from the flange)											
Max Axial Load	25N											
Shaft Radial Play	≤ 0.04mm											
Shaft Axial Play	≤ 0.3mm											

Note: Please specify the required gear ratio with the blank box when ordering models.

### Mechanical Dimension



### Wiring Diagram



NEMA 17 (□42mm)  
Hybrid Stepper Motor

Ø42mm Planetary Gearhead  
Enhanced Type

Rated Admissible Torque  
3 N.m ~ 10 N.m



### Motor Specifications

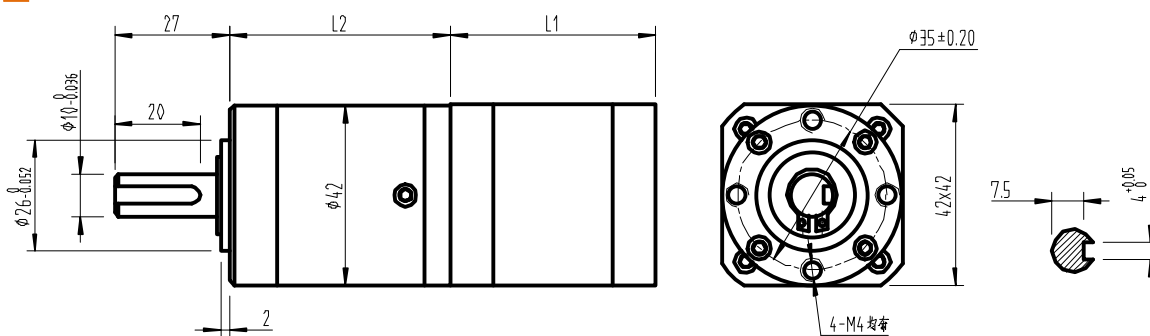
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG42S34-401	1.3	2.4	2.8	28	1.6	34	Bi (4)	220	34	1:189
NHG42S34-402	1.7	1.2	1.8	28	1.6	34	Bi (4)	220	34	1:189
NHG42S34-630	0.4	30	18	21	1.6	34	Uni (6)	220	34	1:264
NHG42S40-401	1.3	2.5	5.0	40	2.2	54	Bi (4)	280	40	1:71
NHG42S40-402	1.7	1.5	2.8	40	2.2	54	Bi (4)	280	40	1:71
NHG42S40-601	1.2	3.2	2.8	28	2.2	54	Uni (6)	280	40	1:100
NHG42S40-630	0.4	30	28	28	2.2	54	Uni (6)	280	40	1:100

### Gearhead Specifications

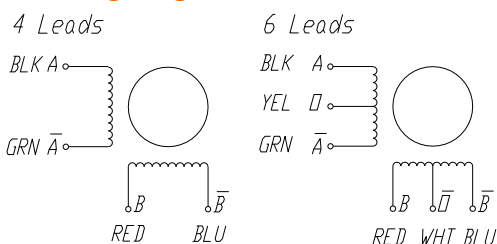
Model	NTP42ES100-□□□-D10K27 (Output shaft: Ø10mm, Len/27mm, Keyway)											
Reduction Ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369
Exact Reduction Ratio	3.71	5.18	13.76	19.22	26.83	51.06	71.30	99.55	138.99	189.45	264.52	369.32
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4		
Transmission Efficiency	90%		81%			73%				66%		
Rated Admissible Torque	3.0N.m		5.0N.m			8.0N.m				10.0N.m		
Max Momentary Admissible Torque	9.0N.m		15.0N.m			24.0N.m				30.0N.m		
Gearhead's Housing Length (L2)	41.3mm		51.6mm			64.4mm				74.7mm		
Weight	320g		420g			520g				620g		
Housing Material	Metal											
Bearing at Output	Sleeve Bearings											
Backlash	≤ 1.5°, at no-load											
Max Radial Load	80N (10 mm from the flange)											
Max Axial Load	30N											
Shaft Radial Play	≤ 0.04mm											
Shaft Axial Play	≤ 0.3mm											

Note: Please specify the required gear ratio with the blank box when ordering models.

### Mechanical Dimension



### Wiring Diagram



NEMA 17 (□42mm)  
Hybrid Stepper Motor

Ø42mm Planetary Gearhead  
Long Lifetime & High Torque Type

Rated Admissible Torque  
6 N.m ~ 20 N.m



### Motor Specifications

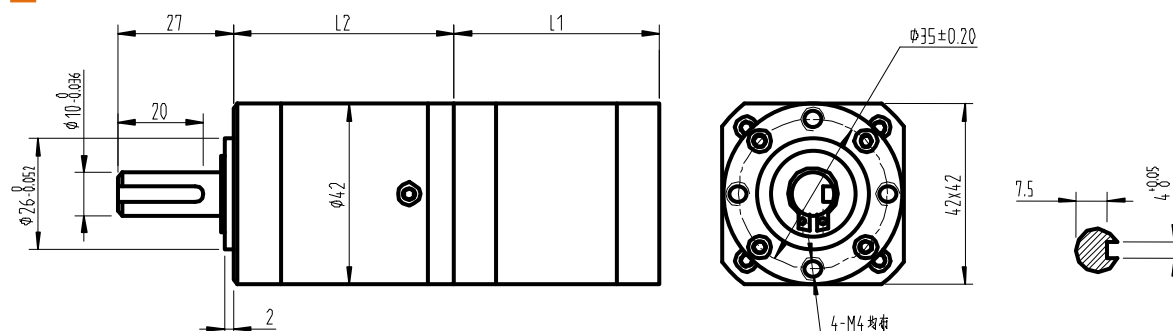
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG42S40-401	1.3	2.5	5.0	40	2.2	54	Bi (4)	280	40	1:247
NHG42S40-402	1.7	1.5	2.8	40	2.2	54	Bi (4)	280	40	1:247
NHG42S40-601	1.2	3.2	2.8	28	2.2	54	Uni (6)	280	40	1:316
NHG42S40-630	0.4	30	28	28	2.2	54	Uni (6)	280	40	1:316
NHG42S48-401	1.3	3.2	5.5	52	2.6	68	Bi (4)	350	48	1:106
NHG42S48-402	1.7	1.8	3.2	52	2.6	68	Bi (4)	350	48	1:106
NHG42S48-403	2.3	1.2	1.6	46	2.6	68	Bi (4)	350	48	1:106
NHG42S48-630	0.4	30	38	34	2.6	68	Uni (6)	350	48	1:247

### Gearhead Specifications

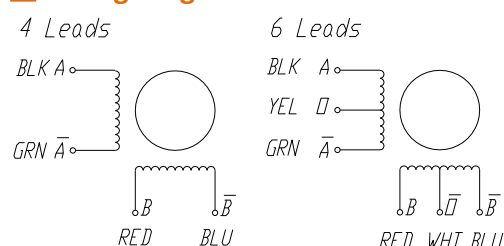
Model	NTP42FS200-□□□-D10K27 (Output shaft: Ø10mm, Len/27mm, Keyway)									
Reduction Ratio	4.44	17	22	65	83	106	247	316	403	515
Exact Reduction Ratio	4.444	16.97	21.66	64.78	82.72	105.61	247.33	315.81	403.24	514.87
Transmission Stage	Stage 1	Stage 2		Stage 3			Stage 4			
Transmission Efficiency	90%	81%		73%			66%			
Rated Admissible Torque	6N.m	10N.m		16N.m			20N.m			
Max Momentary Admissible Torque	18N.m	30N.m		48N.m			60N.m			
Gearhead's Housing Length (L2)	39.0mm	49.4mm		59.6mm			69.8mm			
Weight	350g	450g		550g			650g			
Housing Material	Metal									
Bearing at Output	Sleeve Bearings									
Backlash	≤ 1.5°, at no-load									
Max Radial Load	80N (10 mm from the flange)									
Max Axial Load	30N									
Shaft Radial Play	≤ 0.04mm									
Shaft Axial Play	≤ 0.3mm									

Note: Please specify the required gear ratio with the blank box when ordering models.

### Mechanical Dimension



### Wiring Diagram



NEMA 23 (Ø57mm)  
Hybrid Stepper Motor

Ø56mm Planetary Gearhead  
Enhanced or Long Lifetime Type

Rated Admissible Torque  
9 N.m ~ 30 N.m



### Motor Specifications

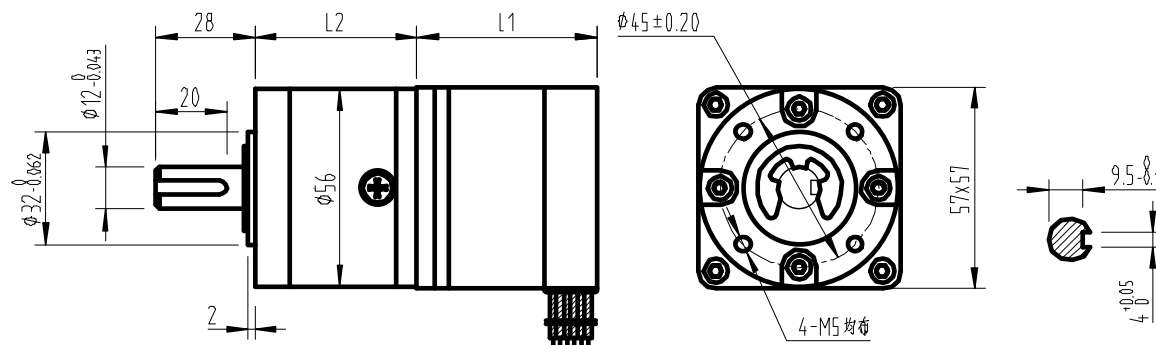
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG57K41-402	2.1	0.8	1.4	32	3.5	60	Bi (4)	450	41	1:326
NHG57K41-602	1.5	1.5	1.4	24	3.5	60	Uni (6)	450	41	1:326
NHG57K51-401	1.4	2.5	6.2	62	5.5	118	Bi (4)	600	51	1:198
NHG57K51-402	2.0	1.3	3.2	62	5.5	118	Bi (4)	600	51	1:198
NHG57K51-603	1.4	2.5	3.2	45	5.5	118	Uni (6)	600	51	1:276
NHG57K56-401	2.5	1.2	3.0	80	6.5	145	Bi (4)	650	56	1:77
NHG57K56-602	1.2	5.0	6.8	60	6.5	145	Uni (6)	650	56	1:168
NHG57K56-604	2.4	1.0	1.2	60	6.5	145	Uni (6)	650	56	1:168

### Gearhead Specifications

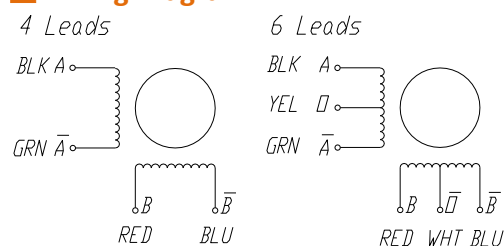
Model	NTP56ES300-□□□-D12K28 (Output shaft: Ø12mm, Len/28mm, Keyway)														
Reduction Ratio	3.60	4.25	13	15	18	47	55	65	77	168	198	234	276	326	
Exact Reduction Ratio	3.60	4.25	12.96	15.30	18.06	46.66	55.08	65.03	76.77	167.96	198.29	234.09	276.36	326.25	
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4					
Transmission Efficiency	90%		81%			73%				66%					
Rated Admissible Torque	9N.m		15N.m			24N.m				30N.m					
Max Momentary Admissible	27N.m		45N.m			72N.m				90N.m					
Gearhead's Housing Length (L2)	40.5mm		51.8mm			63.1mm				82.6mm (74.4mm, if long lifetime type)					
Weight	0.64kg		0.71kg			0.88kg				1.22kg					
Housing Material	Metal														
Bearing at Output	Sleeve Bearings														
Backlash	≤ 1.5°, at no-load														
Max Radial Load	200N (10 mm from the flange)														
Max Axial Load	100N														
Shaft Radial Play	≤ 0.04mm														
Shaft Axial Play	≤ 0.3mm														

Note: Please specify the required gear ratio with the blank box when ordering models.

### Mechanical Dimension



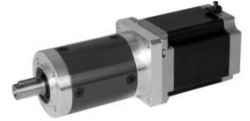
### Wiring Diagram



NEMA 23 (□57mm)  
Hybrid Stepper Motor

Ø56mm Planetary Gearhead  
Enhanced or Long Lifetime Type

Rated Admissible Torque  
9 N.m ~ 30 N.m



### Motor Specifications

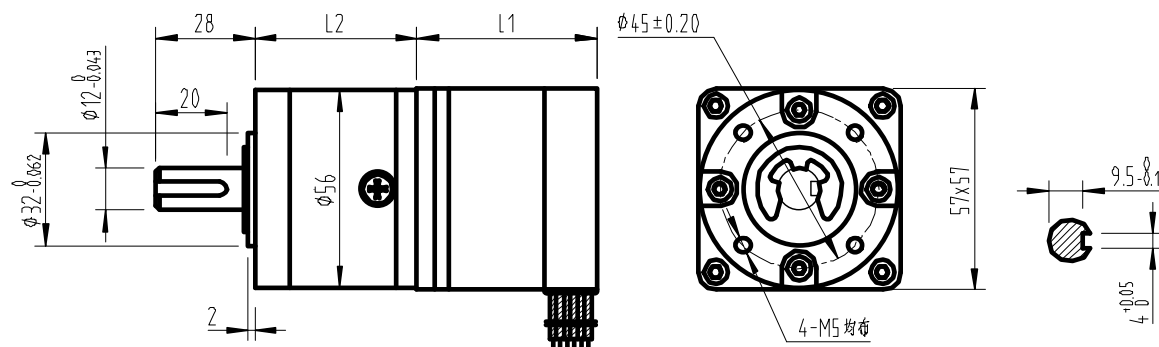
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)	Applicable Ratio
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm	≤
NHG57S41-420	2.0	1.2	2.5	55	2.5	150	Bi (4)	470	41	1:234
NHG57S41-601	1.0	5.2	5.5	40	2.5	150	Uni (6)	470	41	1:326
NHG57S45-425	2.5	1.0	2.2	80	2.8	190	Bi (4)	520	45	1:77
NHG57S51-425	2.5	1.2	3.2	90	2.8	230	Bi (4)	590	51	1:77
NHG57S51-601	0.8	6.8	9.2	70	3.0	230	Uni (6)	590	51	1:168
NHG57S56-425	2.5	1.3	4.2	110	3.5	280	Bi (4)	680	56	1:77
NHG57S56-430	3.0	0.8	2.4	110	3.5	280	Bi (4)	680	56	1:77
NHG57S56-404	4.2	0.4	1.2	110	3.5	280	Bi (4)	680	56	1:77
NHG57S56-601	1.5	3.2	5.5	90	3.5	280	Uni (6)	680	56	1:77

### Gearhead Specifications

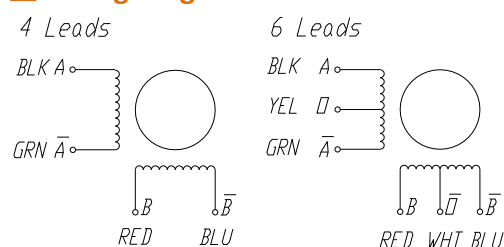
Model	NTP56ES300-□□□-D12K28 (Output shaft: Ø12mm, Len/28mm, Keyway)													
Reduction Ratio	3.60	4.25	13	15	18	47	55	65	77	168	198	234	276	326
Exact Reduction Ratio	3.60	4.25	12.96	15.30	18.06	46.66	55.08	65.03	76.77	167.96	198.29	234.09	276.36	326.25
Transmission Stage	Stage 1		Stage 2			Stage 3				Stage 4				
Transmission Efficiency	90%		81%			73%				66%				
Rated Admissible Torque	9N.m		15N.m			24N.m				30N.m				
Max Momentary Admissible Torque	27N.m		45N.m			72N.m				90N.m				
Gearhead’s Housing Length (L2)	40.5mm		51.8mm			63.1mm				82.6mm (74.4mm, if long lifetime type)				
Weight	0.64kg		0.71kg			0.88kg				1.22kg				
Housing Material	Metal													
Bearing at Output	Sleeve Bearings													
Backlash	≤ 1.5°, at no-load													
Max Radial Load	200N (10 mm from the flange)													
Max Axial Load	100N													
Shaft Radial Play	≤ 0.04mm													
Shaft Axial Play	≤ 0.3mm													

Note: Please specify the required gear ratio with the blank box when ordering models.

### Mechanical Dimension



### Wiring Diagram



NEMA 17 (□42mm)  
Hybrid Stepper Motor

□42mm Spur Gearbox  
GN Type Gear



Motor Specifications

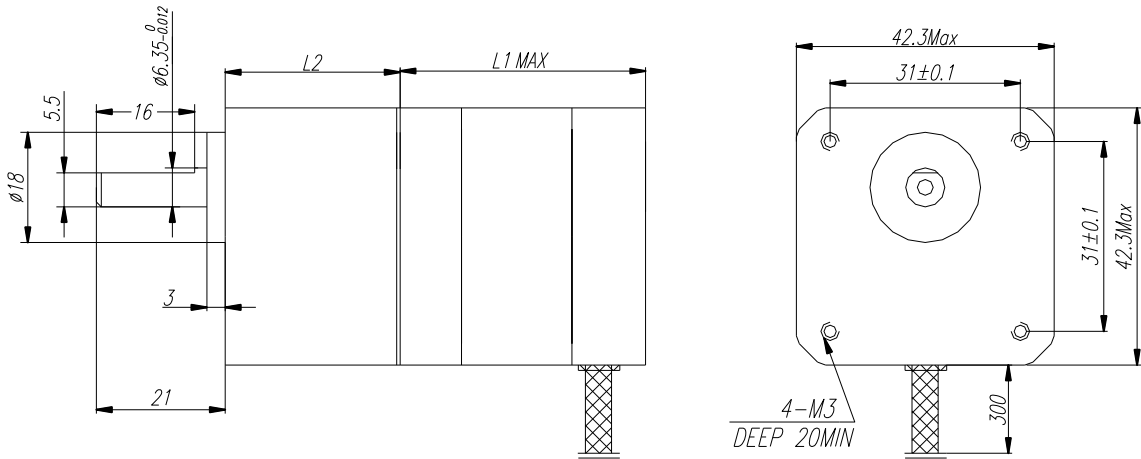
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHG42S34-401	1.3	2.4	2.8	28	1.6	34	Bi (4)	220	34
NHG42S34-402	1.7	1.2	1.8	28	1.6	34	Bi (4)	220	34
NHG42S40-401	1.3	2.5	5.0	40	2.2	54	Bi (4)	280	40
NHG42S40-402	1.7	1.5	2.8	40	2.2	54	Bi (4)	280	40
NHG42S40-601	1.2	3.2	2.8	28	2.2	54	Uni (6)	280	40
NHG42S48-401	1.3	3.2	5.5	52	2.6	68	Bi (4)	350	48
NHG42S48-402	1.7	1.8	3.2	52	2.6	68	Bi (4)	350	48
NHG42S48-403	2.3	1.2	1.6	46	2.6	68	Bi (4)	350	48

Gearbox Specifications

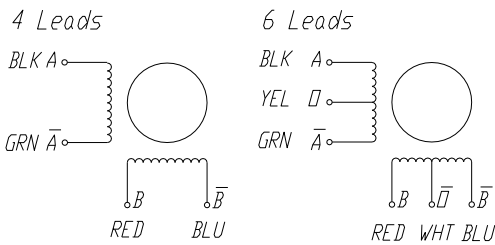
Model	NSG42GN-□□□-D6F21 (Output shaft: ∅6mm, Len/21mm, Flat 1X16mm)												
Reduction Ratio	3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50
Length (L2) (mm)	28.5												
Weight (g)	200												

Note: Please specify the required gear ratio with the blank box when ordering models.

Mechanical Dimension



Wiring Diagram



NEMA 23 (□57mm)  
Hybrid Stepper Motor

□60mm Spur Gearbox  
GN Type Gear



Motor Specifications

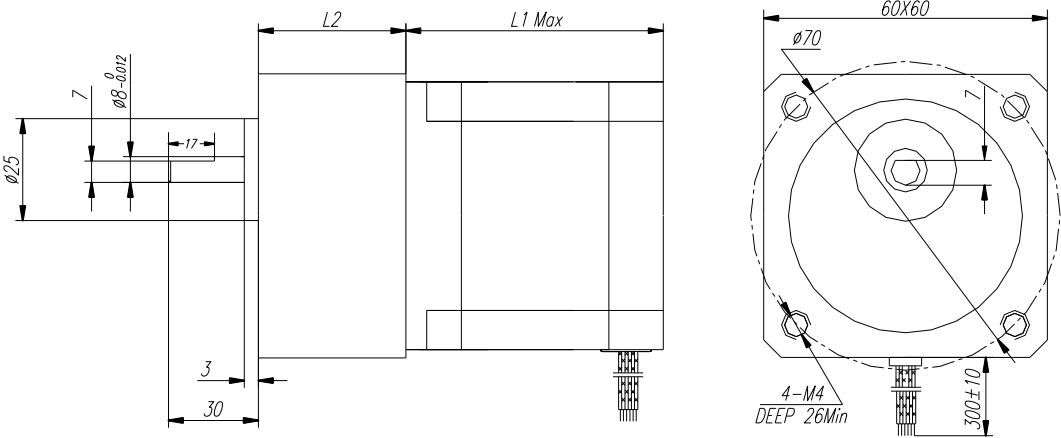
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	g	mm
NHG57S41-420	2.0	1.2	2.5	55	2.5	150	Bi (4)	470	41
NHG57S45-425	2.5	1.0	2.2	80	2.8	190	Bi (4)	520	45
NHG57S51-425	2.5	1.2	3.2	90	2.8	230	Bi (4)	590	51
NHG57S56-425	2.5	1.3	4.2	110	3.5	280	Bi (4)	680	56
NHG57S56-404	4.2	0.4	1.2	110	3.5	280	Bi (4)	680	56
NHG57S64-425	2.5	1.5	4.5	150	5.0	380	Bi (4)	850	64
NHG57S64-404	4.2	0.55	1.2	150	5.0	380	Bi (4)	850	64
NHG57S76-425	2.5	1.8	6.5	180	6.0	440	Bi (4)	1050	76
NHG57S76-404	4.2	0.6	1.8	180	6.0	440	Bi (4)	1050	76

Gearbox Specifications

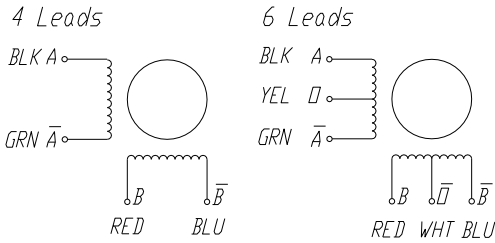
Model	NSG60GN-□□□-D8F30 (Output shaft: ∅8mm, Len/30mm, Flat 1X17mm)												
Reduction Ratio	3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50
Length (L2) (mm)	32										41		
Weight (g)	300										400		

Note: Please specify the required gear ratio with the blank box when ordering models.

Mechanical Dimension



Wiring Diagram



NEMA 34 (□86mm)  
Hybrid Stepper Motor

□90mm Spur Gearbox  
GN/GU Type Gear



## Motor Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	kg	mm
NHG86S66-801	2.7	1.2	3.5	220	5.5	850	Uni (8)	2.0	66
NHG86S66-802	4.0	0.6	1.6	220					
NHG86S66-803	5.0	0.4	1.0	220					
NHG86S78-801	2.7	1.6	5.6	300	6.5	1050	Uni (8)	2.5	78
NHG86S78-802	4.0	0.7	3.0	300					
NHG86S78-803	5.0	0.5	1.8	300					
NHG86S98-801	2.7	2.0	8.6	490	9.5	1550	Uni (8)	3.0	98
NHG86S98-802	4.0	1.0	4.1	490					
NHG86S98-803	5.0	0.6	2.4	490					

## Gearbox Specifications

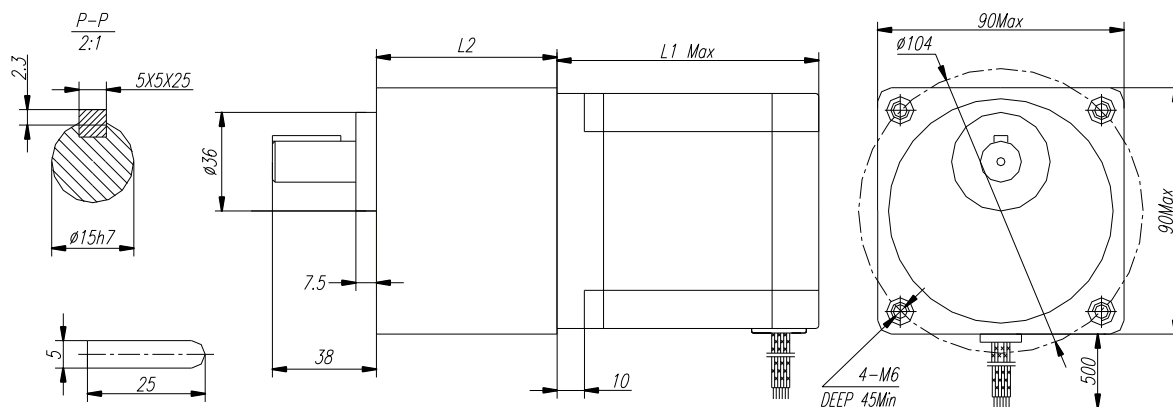
Model	NSG90GN-□□□-D15K38 (Output shaft: ∅15mm, Len/38mm, Keyway)									
Reduction Ratio	3	3.6	5	6	7.5	9	12.5	15	18	25
Length (L2) (mm)	42									60
Weight (kg)	1.1									1.35

Note: Please specify the required gear ratio with the blank box when ordering models.

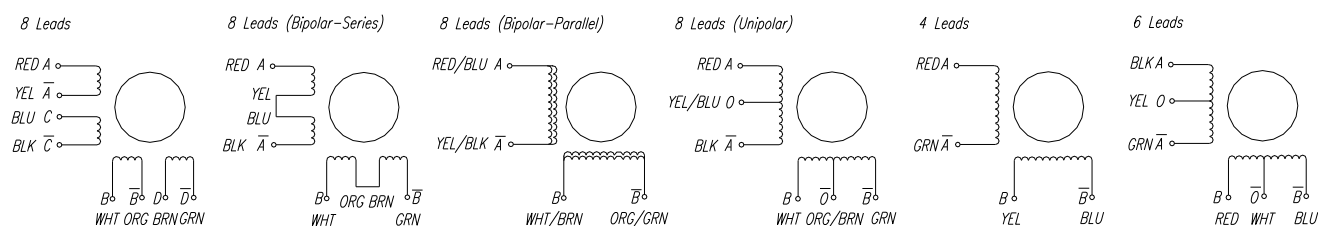
Model	NSG90GU-□□□-D15K38 (Output shaft: ∅15mm, Len/38mm, Keyway)									
Reduction Ratio	3	3.6	5	6	7.5	9	12.5	15	18	25
Length (L2) (mm)	65.5									
Weight (kg)	1.5									

Note: Please specify the required gear ratio with the blank box when ordering models.

## Mechanical Dimension



## Wiring Diagram



NEMA 34 (□86mm)  
Hybrid Stepper Motor

□104mm Spur Gearbox  
GU Type Gear



Motor Specifications

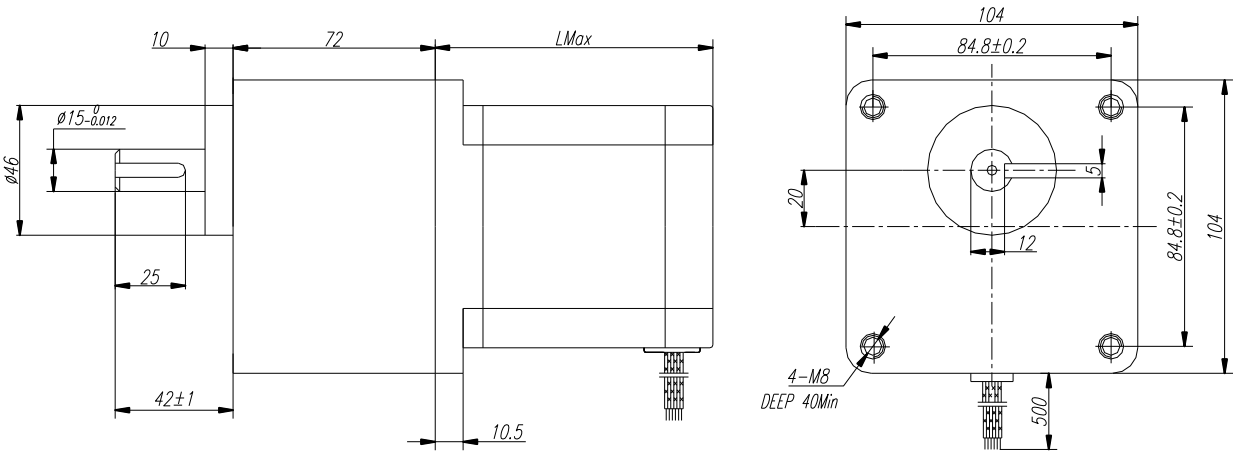
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length (L1)
	A/∅	Ω/∅	mH/∅	N.cm	N.cm	g.cm <sup>2</sup>	# of Leads	kg	mm
NHG86S66-801	2.7	1.2	3.5	220	5.5	850	Uni (8)	2.0	66
NHG86S66-802	4.0	0.6	1.6	220					
NHG86S66-803	5.0	0.4	1.0	220					
NHG86S78-801	2.7	1.6	5.6	300	6.5	1050	Uni (8)	2.5	78
NHG86S78-802	4.0	0.7	3.0	300					
NHG86S78-803	5.0	0.5	1.8	300					
NHG86S98-801	2.7	2.0	8.6	490	9.5	1550	Uni (8)	3.0	98
NHG86S98-802	4.0	1.0	4.1	490					
NHG86S98-803	5.0	0.6	2.4	490					

Gearbox Specifications

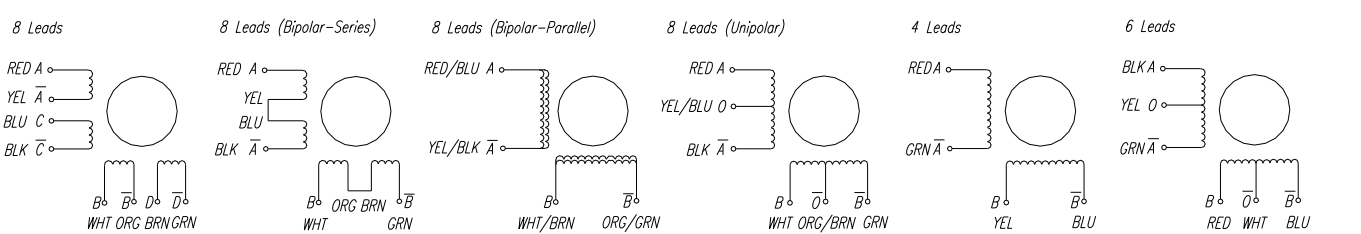
Model	NSG104GU-□□□-D15K42 (Output shaft: ∅15mm, Len/42mm, Keyway)									
Reduction Ratio	3	3.6	5	6	7.5	9	12.5	15	18	25
Length (mm)	72									
Weight (kg)	2.1									

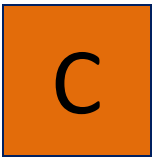
Note: Please specify the required gear ratio with the blank box when ordering models.

Mechanical Dimension



Wiring Diagram





NHP Series

IP65 Rated Stepper Motor



Description	C-1
Applications	C-1
Part Number	C-1
Standard Versions	C-1
NHP57S, NEMA 23	C-2
NHP60S, NEMA 24	C-3
NHP86S, NEMA 34	C-4

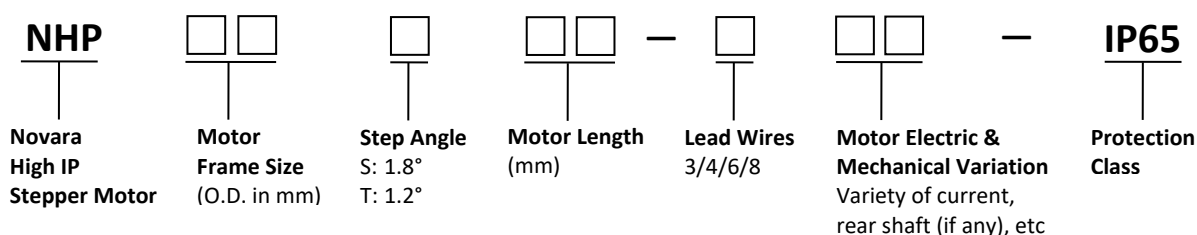
## Description

Novara's NEMA 23, 24 and 34 stepper motors with high IP ratings are specially designed for severe environmental conditions, and even shaft sealing can be IP65 for underwater or harsh industrial operation. These new models, dust proof and resistant to low pressure water jets, are ideal for applications in wet factory environments such as the food and beverage industry, fountain equipment or outdoor use, featuring with special sealing at rear end and between stator and flanges, a front shaft contact seal, sealed-lamination housing, leak-proof cable entry, and so on.

## Applications

Novara's NHP series high IP stepper motor are mainly used in harsh wet environment, and they are ideal solution for food processing, pharmaceutical, chemical and other industries.

## Part Number



## Standard Versions

Model	No. of Phase	NEMA Size	Holding Torque	Rotor Inertia	Weight	Length	Protection Class
			N.m	g.cm <sup>2</sup>	kg	mm	
NHP57S66 Series	2	NEMA 23	1.2	280	0.65	66	IP54/65
NHP57S86 Series	2	NEMA 23	2.0	480	1.05	86	IP54/65
NHP60S70 Series	2	NEMA 24	1.5	340	0.85	70	IP54/65
NHP60S100 Series	2	NEMA 24	3.0	690	1.40	100	IP54/65
NHP86S88 Series	2	NEMA 34	4.5	1800	2.10	88	IP54/65
NHP86S126 Series	2	NEMA 34	8.5	3600	3.60	126	IP54/65

NEMA 23

IP54 Optional

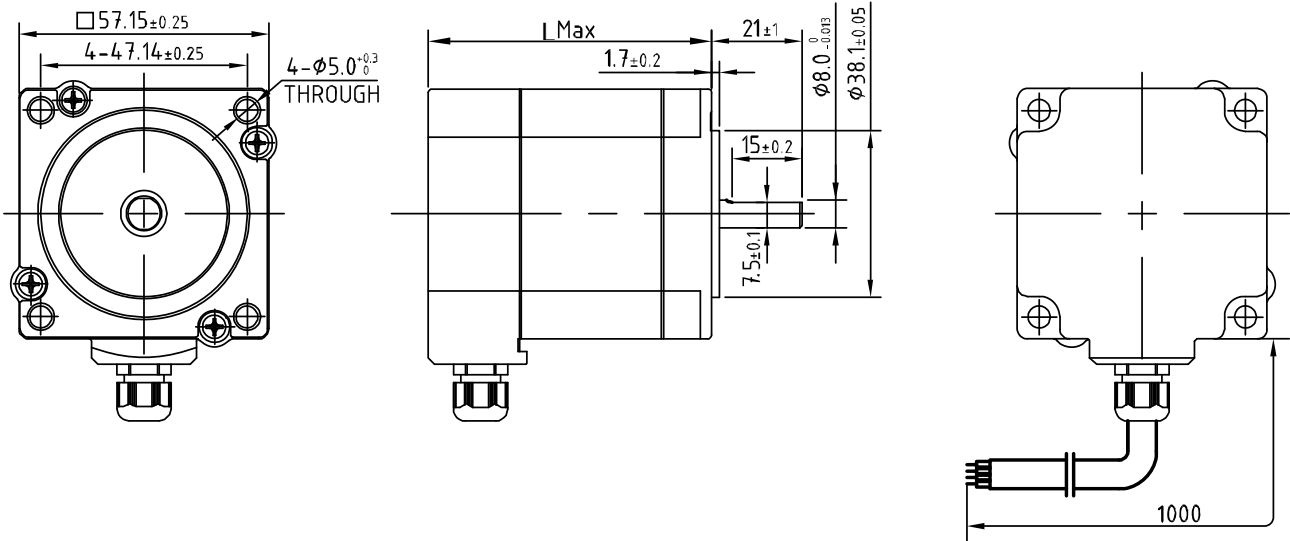
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (920 g-load)



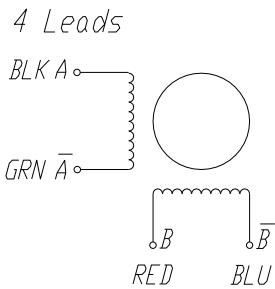
Motor Specifications

Model	Current	Resistance	Inductance	Holding Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.m	g.cm <sup>2</sup>	# of Leads	kg	mm
NHP57S66-410-IP65	1.0	6.0	22.0	1.2	280	Bi (4)	0.65	66
NHP57S66-420-IP65	2.0	1.65	5.7	1.2	280	Bi (4)	0.65	66
NHP57S66-430-IP65	3.0	0.74	2.4	1.2	280	Bi (4)	0.65	66
NHP57S86-420-IP65	2.0	2.5	9.7	2.0	480	Bi (4)	1.05	86
NHP57S86-430-IP65	3.0	1.15	4.4	2.0	480	Bi (4)	1.05	86
NHP57S86-440-IP65	4.0	0.65	2.5	2.0	480	Bi (4)	1.05	86

Mechanical Dimension



Wiring Diagram



NEMA 24

IP54 Optional

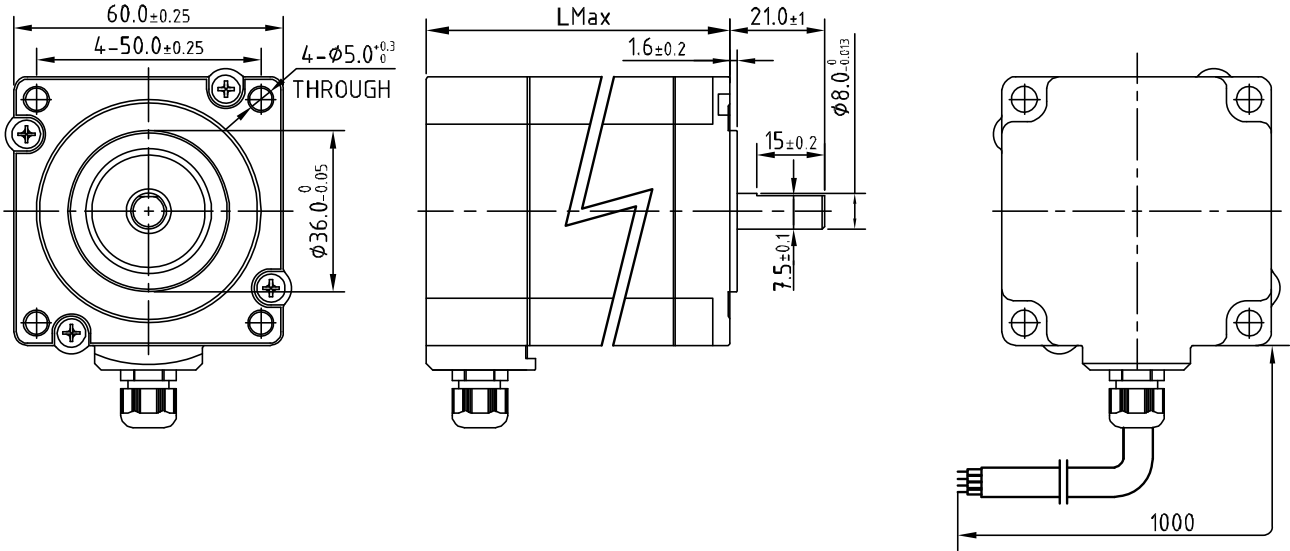
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (920 g-load)



## Motor Specifications

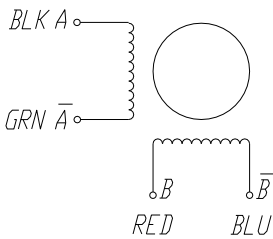
Model	Current	Resistance	Inductance	Holding Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.m	g.cm <sup>2</sup>	# of Leads	kg	mm
NHP60S70-420-IP65	2.0	1.8	6.0	1.5	340	Bi (4)	0.85	70
NHP60S70-430-IP65	3.0	0.8	2.5	1.5	340	Bi (4)	0.85	70
NHP60S70-440-IP65	4.0	0.4	1.4	1.5	340	Bi (4)	0.85	70
NHP60S100-430-IP65	3.0	1.3	5.0	3.0	690	Bi (4)	1.40	100
NHP60S100-440-IP65	4.0	0.8	3.0	3.0	690	Bi (4)	1.40	100
NHP60S100-450-IP65	5.0	0.4	2.0	3.0	690	Bi (4)	1.40	100

## Mechanical Dimension



## Wiring Diagram

4 Leads



NEMA 34

IP54 Optional

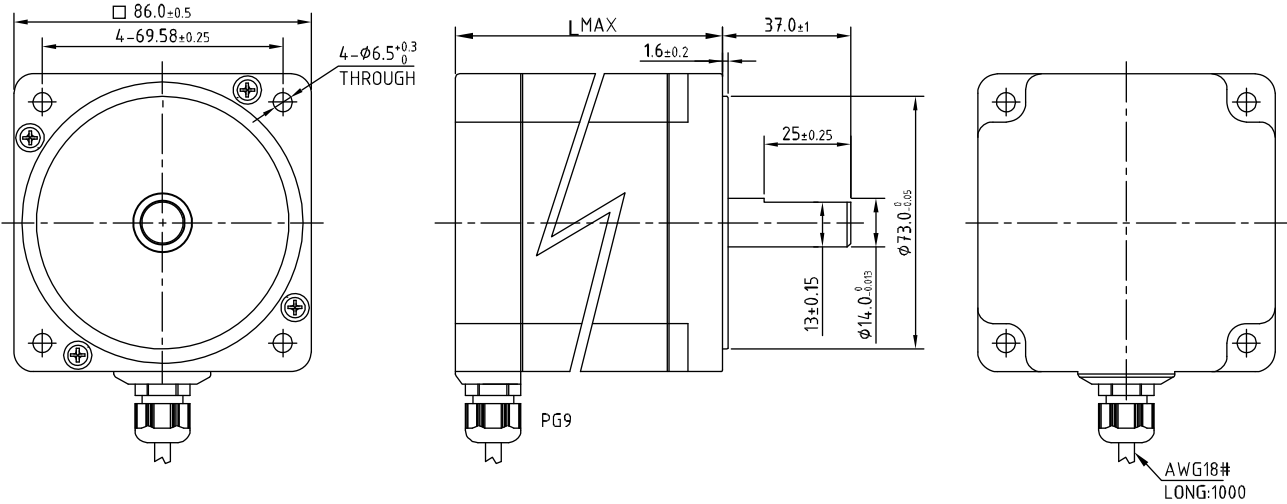
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (920 g-load)



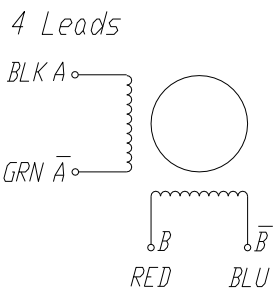
Motor Specifications

Model	Current	Resistance	Inductance	Holding Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/∅	Ω/∅	mH/∅	N.m	kg.cm <sup>2</sup>	# of Leads	kg	mm
NHP86S88-430-IP65	3.0	1.3	12.0	4.5	1.8	Bi (4)	2.1	88
NHP86S88-445-IP65	4.5	0.6	6.0	4.5	1.8	Bi (4)	2.1	88
NHP86S88-460-IP65	6.0	0.3	3.5	4.5	1.8	Bi (4)	2.1	88
NHP86S126-430-IP65	3.0	2.1	25.7	8.5	3.6	Bi (4)	3.6	126
NHP86S126-445-IP65	4.5	0.9	11.8	8.5	3.6	Bi (4)	3.6	126
NHP86S126-460-IP65	6.0	0.5	6.5	8.5	3.6	Bi (4)	3.6	126

Mechanical Dimension



Wiring Diagram



D

## NTMS Series PM Stepper Motor



Description	D-1
Applications	D-1
Part Number	D-1
Standard Versions	D-1
NTMS10 Series	D-2
NTMS15 Series	D-3
NTMS20 Series	D-4
NTMS25 Series	D-5
NTMS35 Series	D-6
NTMS42 Series	D-7
NTMS49 Series	D-8
NTMS57 Series	D-9



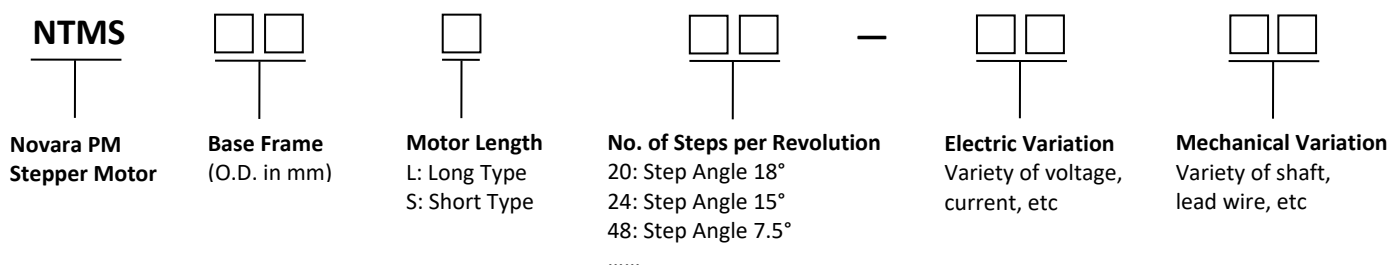
## Description

Novara's NTMS series PM stepper motors feature high dynamic torque at low speed and large basic step angles. These motors are available from 10mm to 57mm in outside diameter, with standard and customized features that make this product ideal for medical, instrumentation and valve applications. Besides conventional solutions, custom housing and winding, shaft modification, linear actuator, as well as gearbox adders are also available to optimize the product's performance for you needs.









## Applications

Novara's NTMS series PM stepper motors are widely used in kinds of applications, such as automotive instruments, printers, scanners, copy machines, fax machines, card readers, medical equipment and other industrial & office automation equipment.

## Part Number



## Standard Versions

 <b>NTMS10 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø10mm</li> <li>• Step Angle: 18°</li> </ul>	 <b>NTMS15 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø15mm</li> <li>• Step Angle: 18°</li> </ul>
 <b>NTMS20 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø20mm</li> <li>• Step Angle: 18°</li> </ul>	 <b>NTMS25 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø25mm</li> <li>• Step Angle: 7.5° / 15°</li> </ul>
 <b>NTMS35 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø35mm</li> <li>• Step Angle: 7.5° / 15°</li> </ul>	 <b>NTMS42 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø42mm</li> <li>• Step Angle: 7.5°</li> </ul>
 <b>NTMS49 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø49mm</li> <li>• Step Angle: 7.5°</li> </ul>	 <b>NTMS57 Series</b> <ul style="list-style-type: none"> <li>• Frame Size: Ø57mm</li> <li>• Step Angle: 7.5°</li> </ul>

Ø10mm

18°

Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø	mH/Ø	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS10L20-01	2	18	3.3	0.22	15	3.0	16.3	10	<1.0	a	1, 2
NTMS10L20-04	2	18	3.3	0.33	10	1.9	17.3	10	<1.0	a	1, 2
NTMS10L20-05	2	18	3.3	0.5	6.6	1.2	18.3	10	<1.0	a	1, 2

## Typical Outline

Fig 1

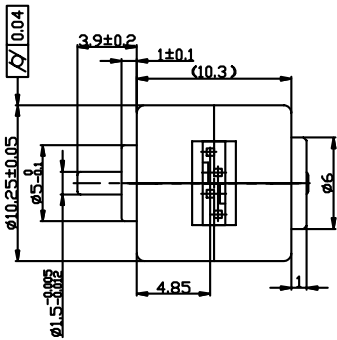
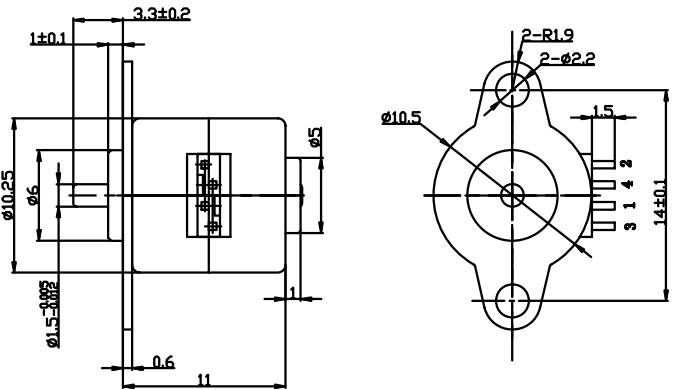
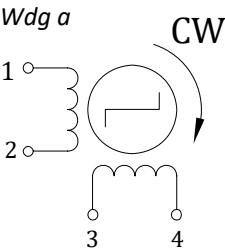


Fig 2



## Wiring Diagram



Ø15mm

18°

Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø	mH/Ø	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS15L20-01	2	18	5	0.5	10	2.0	27	10	0.3	a	1
NTMS15L20-02	2	18	7.2	0.15	50	9.5	25	10	0.3	a	1
NTMS15L20-03	2	18	5	0.33	15	3.0	25	10	0.3	a	2
NTMS15L20-04	2	18	12	0.24	50	8.1	25	10	0.3	a	2
NTMS15L20-05	2	18	12	0.065	190	37	24	10	0.3	a	2

## Typical Outline

Fig 1

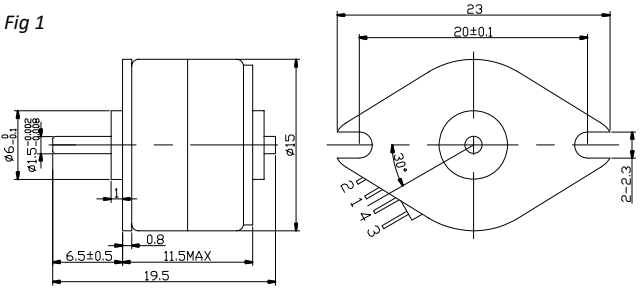
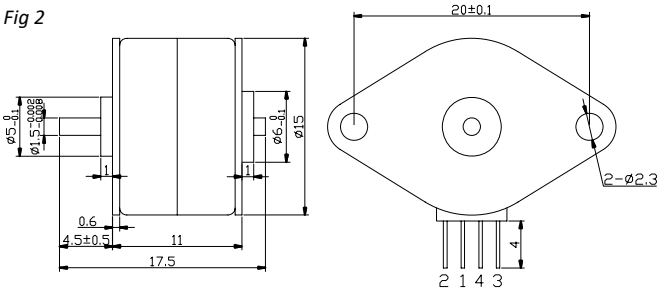
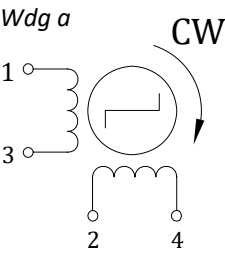


Fig 2



## Wiring Diagram

Wdg a



Ø20mm

18°

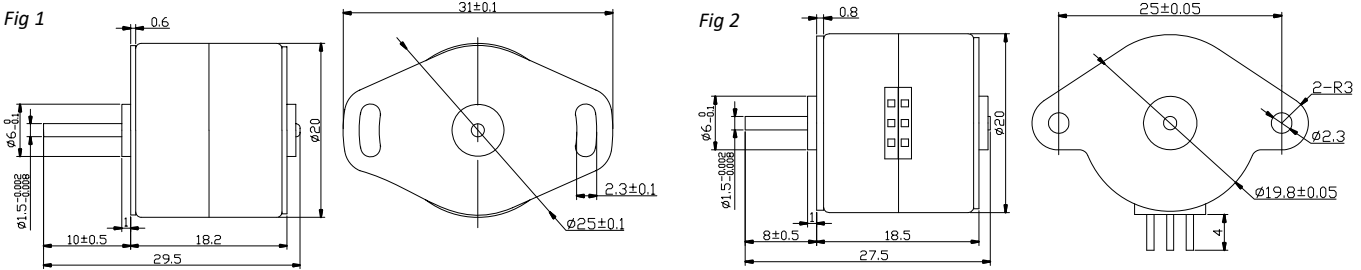
Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



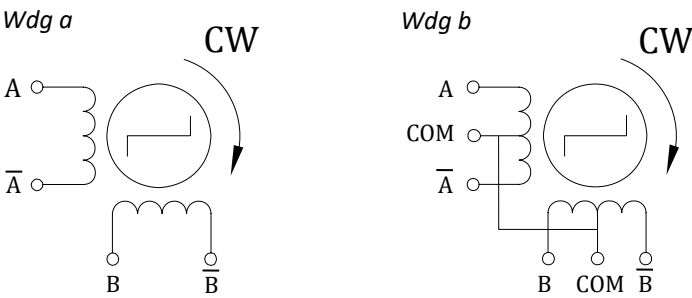
Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø	mH/Ø	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS20L20-01	2	18	5	0.5	10	4.3	60	20	0.6	a	1
NTMS20L20-02	2	18	5	0.39	13	7.4	40	20	0.6	b	2

Typical Outline



Wiring Diagram



Ø25mm

7.5° / 15°



Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E

## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø	mH/Ø	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS25S48-02	4	7.5	12	0.15	80	18	90	20	1.0	a	1
NTMS25L48-01	4	7.5	5	0.5	10	2.1	120	45	1.0	a	2
NTMS25L48-02	4	7.5	12	0.24	50	10.5	160	35	1.0	a	2
NTMS25L24-01	4	15	12	0.4	30	6	150	75	1.0	a	3

## Typical Outline

Fig 1

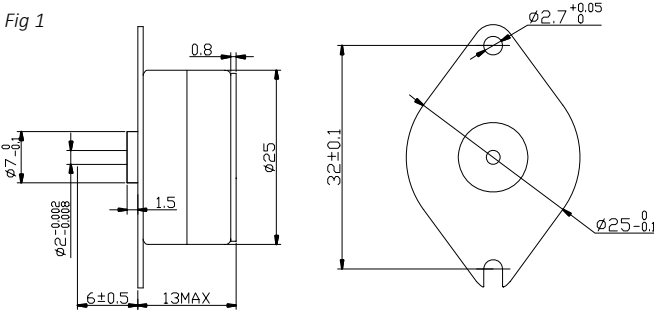


Fig 2

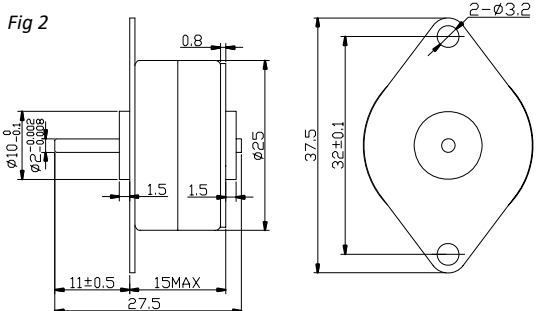
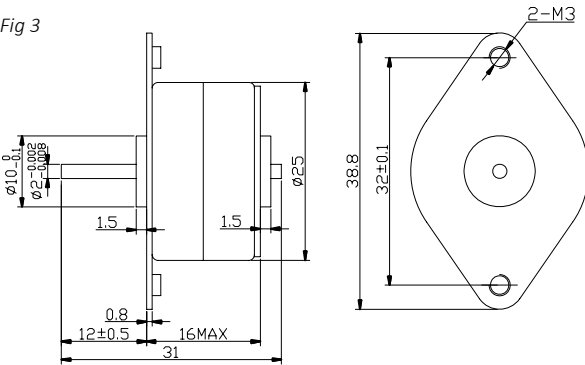
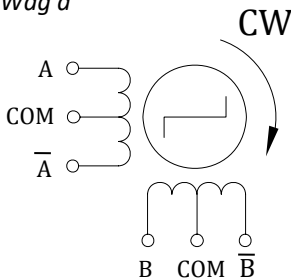


Fig 3



## Wiring Diagram

Wdg a



Ø35mm

7.5° / 15°

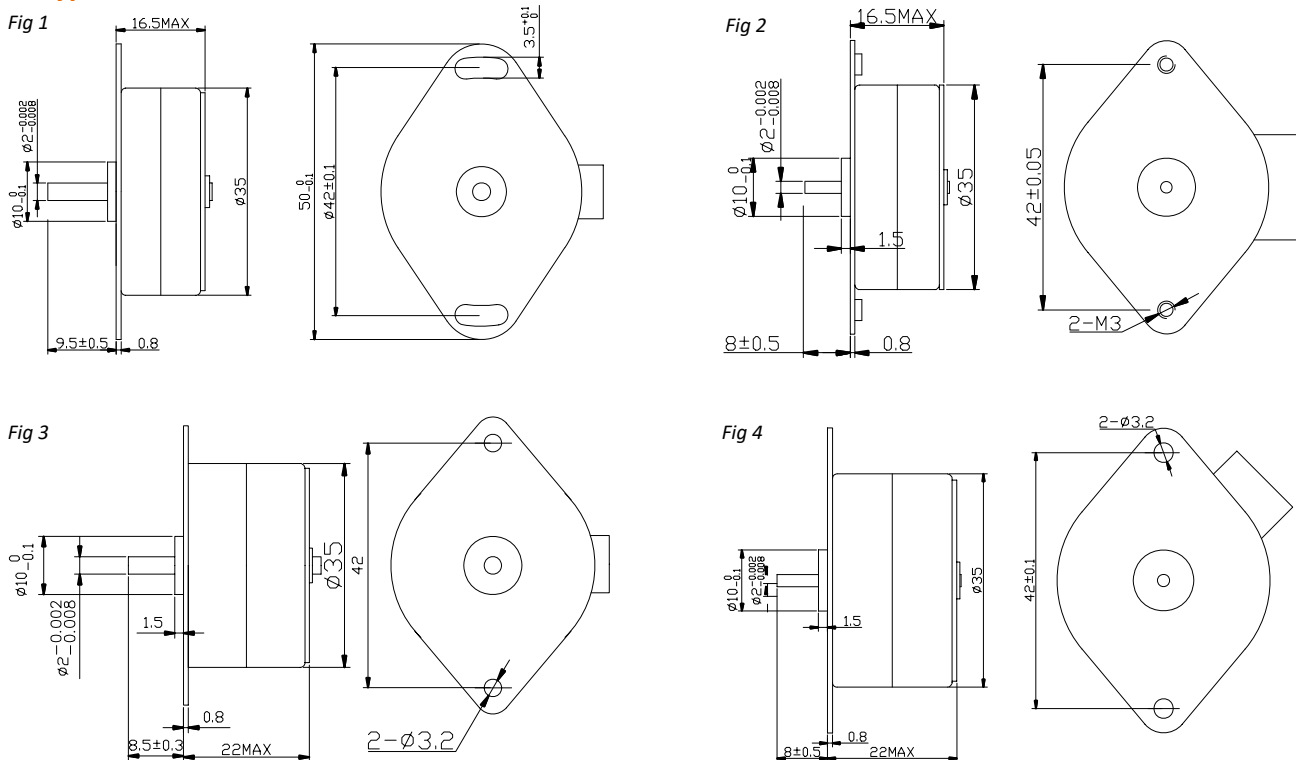


Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E

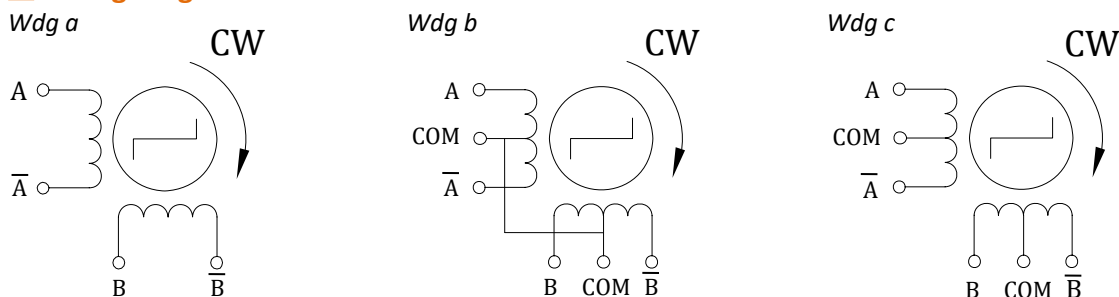
## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø	mH/Ø	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS35S48-01	2	7.5	5	0.67	7.5	5.7	400	60	7.5	a	1
NTMS35S48-02	2	7.5	5	0.4	12.5	10.5	390	65	7.5	a	2
NTMS35S48-03	4	7.5	12	0.26	47	16.5	300	65	7.5	b	2
NTMS35L24-01	4	15	24	0.28	85	36.5	450	125	7.5	c	3
NTMS35L48-01	2	7.5	12	0.2	60	78	550	125	7.5	a	4
NTMS35L48-02	4	7.5	24	0.22	110	54.2	550	125	7.5	b	4

## Typical Outline



## Wiring Diagram



Ø42mm

7.5°

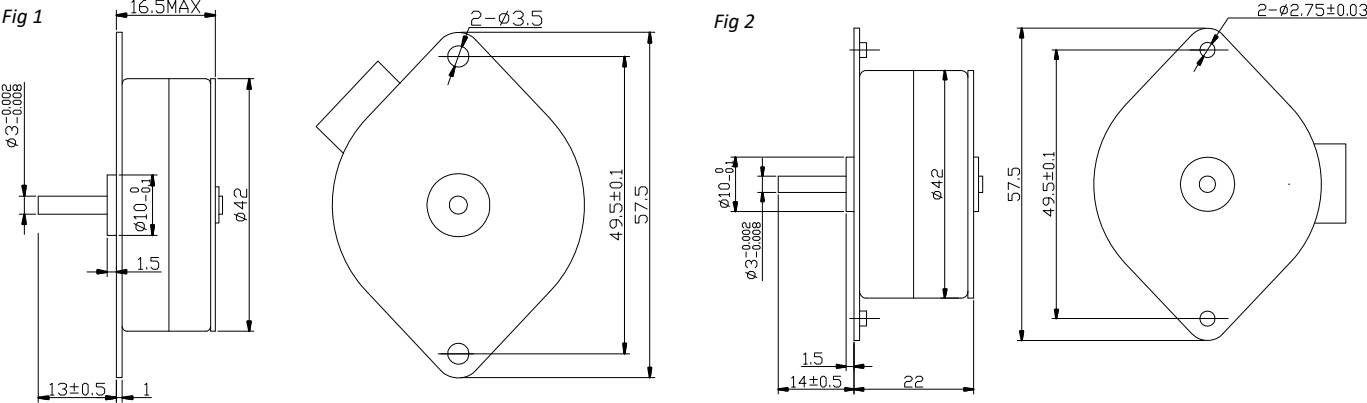


Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E

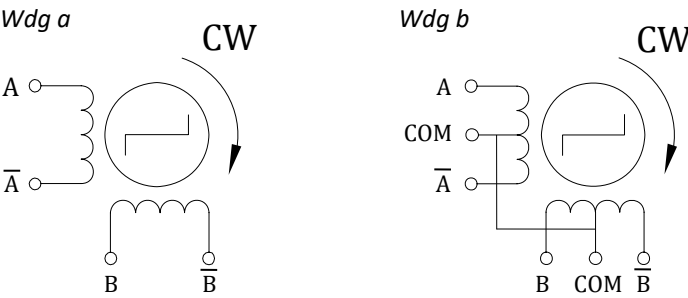
## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS42S48-01	4	7.5	12	0.3	40	550	100	9.6	b	1
NTMS42S48-02	2	7.5	5	0.59	8.6	500	100	9.6	a	1
NTMS42L48-01	4	7.5	24	0.24	100	800	210	9.6	b	2
NTMS42L48-02	4	7.5	12	0.2	60	800	210	9.6	b	2

## Typical Outline



## Wiring Diagram



Ø49mm

7.5°



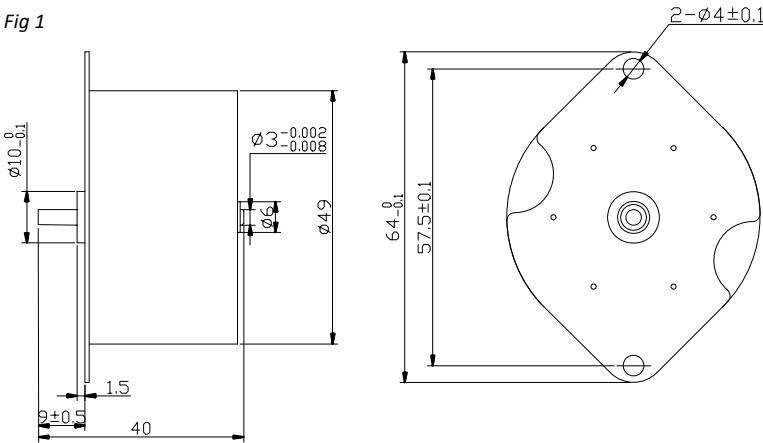
Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E

Specifications

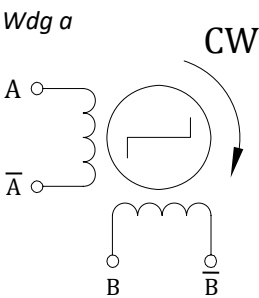
Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS49L48-01	2	7.5	5	0.91	5.5	1700	350	14.5	a	1

Typical Outline

Fig 1



Wiring Diagram



Ø57mm

7.5°

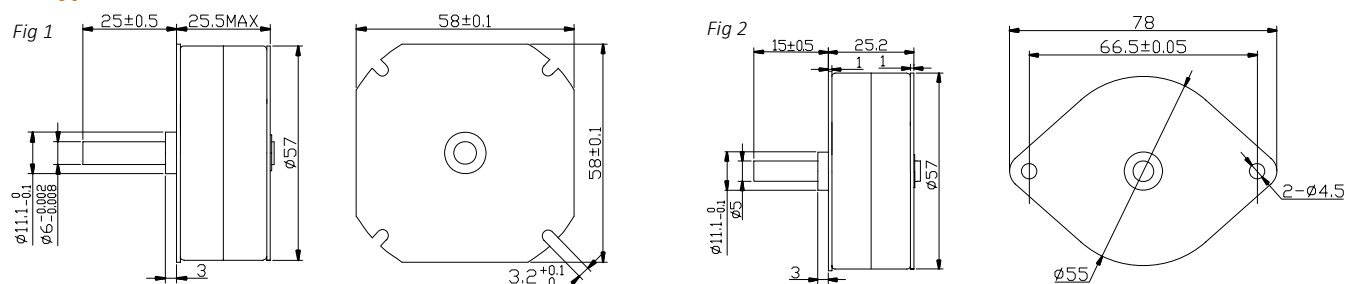
Step Angle Accuracy	±8%
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



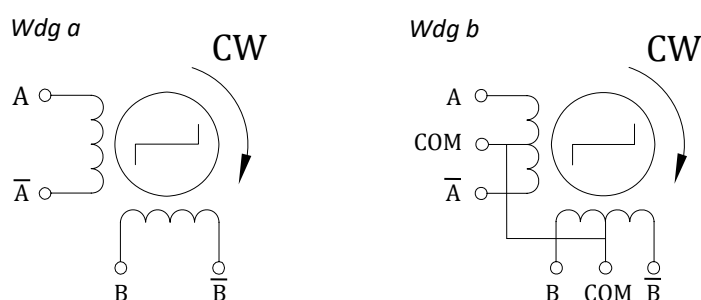
## ■ Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Wiring Diagram	Drawing
		°	V/∅	A/∅	Ω/∅	mH/∅	g.cm	g.cm	g.cm <sup>2</sup>	Wdg	Fig
NTMS57L48-01	4	7.5	12	0.6	21	24.2	1500	425	12.5	b	1
NTMS57L48-02	2	7.5	5.6	0.625	9	25.5	1200	425	12.5	a	2

## ■ Typical Outline



## ■ Wiring Diagram







## NTMG Series PM Stepper Gear Motor



Description	E-1
Applications	E-1
Part Number	E-1
Standard Versions	E-1
NTMG24N Series	E-2
NTMG28N Series	E-3
NTMG35N Series	E-4
NTMG15P Series	E-5
NTMG25P Series	E-6
NTMG35P Series	E-7
NTMG42P Series	E-8








## Description

Novara's NTMG Series PM Stepper Gearmotor includes ordinary type (motor with gears inside) and precision type (motor with added gearhead). These motors offer a wide range of gear ratios in a compact size, along with high output and high resolution, especially the precision-type ones. They are low-cost solutions and can perfectly meet your needs of motion or automation control. Besides, custom motor winding and gearhead specs are also available.








## Applications

Novara's NTMG Series PM Stepper Gearmotors are widely used in kinds of applications, such as air-conditioners, printers, photocopiers, power tools and other industrial & office automation equipment.

## Part Number

NTMG				—		
Novara PM Stepper Gearmotor	Base Frame (O.D. in mm)	Motor Type N: Ordinary Type, With gears inside P: Precision Type, With added gearbox	Reduction Ratio 05: 1:5 10: 1:10 30: 1:30 .....		Electric Variation Variety of voltage, current, etc	Mechanical Variation Variety of shaft, lead wire, etc

## Novara's PM Stepper Gearmotors Summary

	<b>NTMG24N Series</b> <ul style="list-style-type: none"> <li>• Ordinary Type</li> <li>• Frame Size: Ø24mm</li> </ul>		<b>NTMG28N Series</b> <ul style="list-style-type: none"> <li>• Ordinary Type</li> <li>• Frame Size: Ø28mm</li> </ul>
	<b>NTMG35N Series</b> <ul style="list-style-type: none"> <li>• Ordinary Type</li> <li>• Frame Size: Ø35mm</li> </ul>		<b>NTMG15P Series</b> <ul style="list-style-type: none"> <li>• Precision Type</li> <li>• Frame Size: Ø15mm</li> </ul>
	<b>NTMG25P Series</b> <ul style="list-style-type: none"> <li>• Precision Type</li> <li>• Frame Size: Ø25mm</li> </ul>		<b>NTMG35P Series</b> <ul style="list-style-type: none"> <li>• Precision Type</li> <li>• Frame Size: Ø35mm</li> </ul>
	<b>NTMG42P Series</b> <ul style="list-style-type: none"> <li>• Precision Type</li> <li>• Frame Size: Ø42mm</li> </ul>		

Ø24mm

## Ordinary Type

Step Angle Accuracy	±8% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E

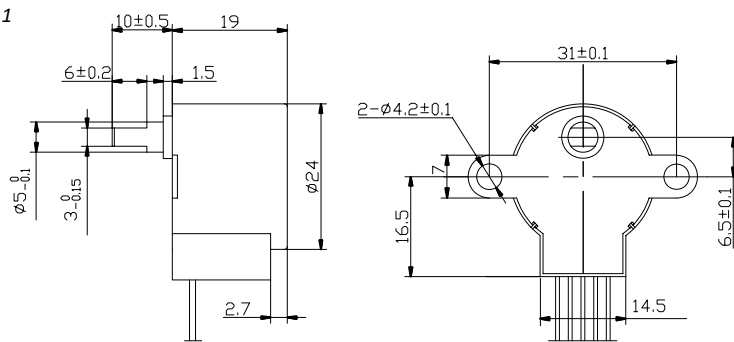


## ■ Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Gear Ratio	No-load Starting Freq.	Pull-in Torque	Detent Torque	Wiring Diagram	Drawing
		°	V/∅	A/∅	Ω/∅		pps	g.cm/pps	g.cm	Wdg	Fig
NTMG24N64-07	4	5.625/64	5	0.071	70	1:64	500	150/100	200	a	1
NTMG24N64-10	4	5.625/64	12	0.1	120	1:64	500	500/100	200	a	1
NTMG24N64-04	4	5.625/64	12	0.04	300	1:64	500	300/100	200	a	1
NTMG24N25-06	4	5.625/25	12	0.06	200	1:25	500	150/100	80	a	1
NTMG24N16-06	4	5.625/16	12	0.06	200	1:16	500	100/100	50	a	1

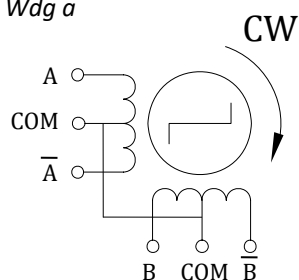
## ■ Typical Outline

*Fig 1*



## ■ Wiring Diagram

*Wdg a*



Ø28mm Ordinary Type

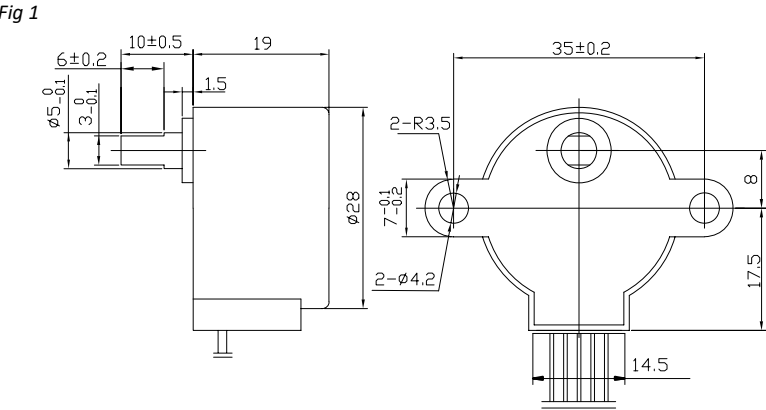
Step Angle Accuracy	±8% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



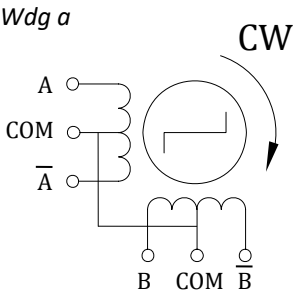
### Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Gear Ratio	No-load Starting Freq.	Pull-in Torque	Detent Torque	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø		pps	g.cm/pps	g.cm	Wdg	Fig
NTMG28N64-10	4	5.625/64	12	0.1	120	1:64	500	500/100	200	a	1
NTMG28N64-06	4	5.625/64	12	0.06	200	1:64	500	400/100	200	a	1
NTMG28N64-04	4	5.625/64	12	0.04	300	1:64	500	300/100	200	a	1

### Typical Outline



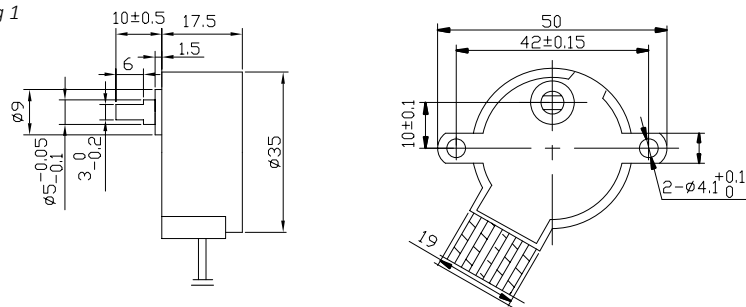
### Wiring Diagram



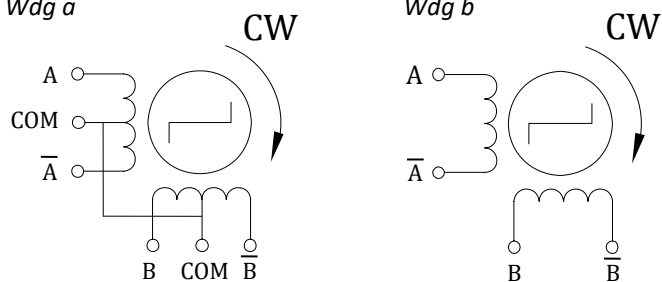
## Ordinary Type

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Gear Ratio	No-load Starting Freq.	Pull-in Torque	Detent Torque	Wiring Diagram	Drawing
		°	V/∅	A/∅	Ω/∅		pps	g.cm/pps	g.cm	Wdg	Fig
NTMG35N85-10	4	7.5/85.25	12	0.1	120	1:85.25	450	800/100	350	a	1
NTMG35N85-06	4	7.5/85.25	12	0.06	200	1:85.25	450	600/100	350	a	1
NTMG35N85-16	2	7.5/85.25	8	0.16	50	1:85.25	600	1500/100	800	b	1

*Fig 1*



*Wdg a*



Ø15mm

Precision Type

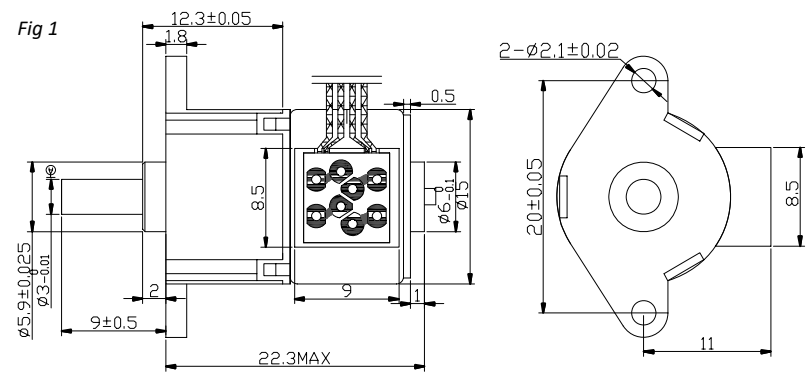
Step Angle Accuracy	±8% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



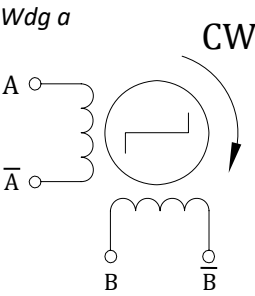
## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Gear Ratio	No-load Starting Freq.	Pull-in Torque	Holding Torque	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø		pps	g.cm/pps	g.cm	Wdg	Fig
NTMG15P50-05	2	18/50	5	0.5	10	1:50	1280	280/200	1350	a	1
NTMG15P102-05	2	18/102.5	5	0.5	10	1:102.5	1000	350/200	2000	a	1

## Typical Outline



## Wiring Diagram



Ø25mm

Precision Type

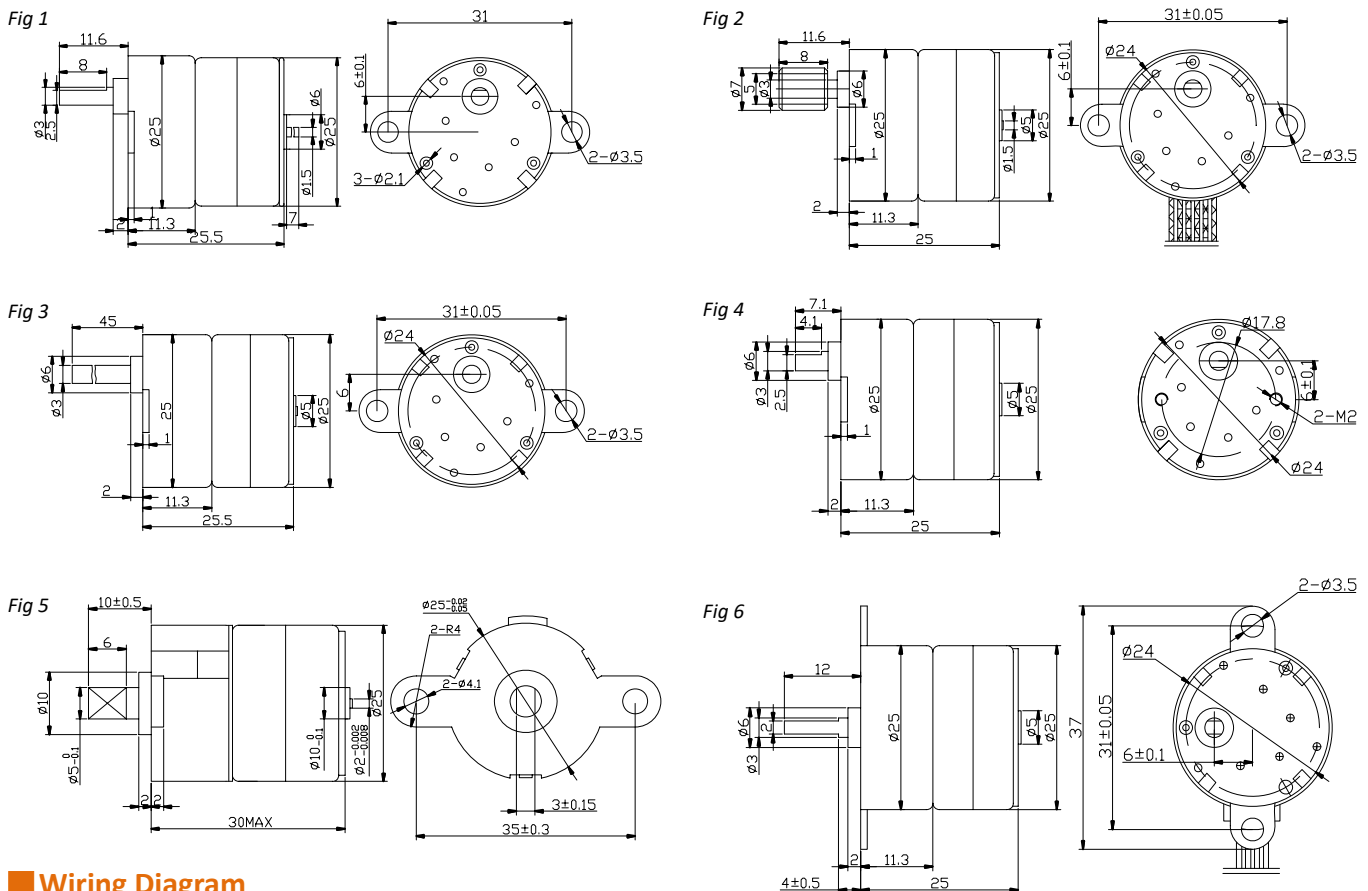


Step Angle Accuracy	±8% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E

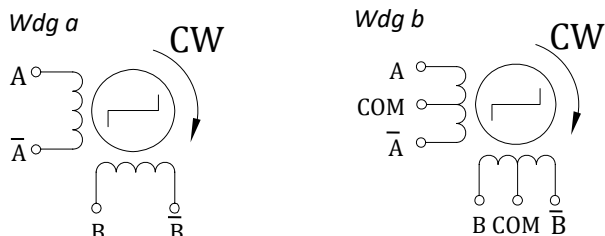
## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Gear Ratio	No-load Starting Freq.	Pull-in Torque	Holding Torque	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø		pps	g.cm/pps	g.cm	Wdg	Fig
NTMG25P05-26	2	7.5/5	2.6	0.52	5	1:5	450	75/200	450	a	1
NTMG25P05-35	2	7.5/5	3.5	0.36	9.6	1:5	420	100/200	500	a	1
NTMG25P60-14	4	7.5/60	13.5	0.105	128	1:60	720	1500/410	7700	a	2
NTMG25P20-12	4	15/20	12	0.08	150	1:20	600	500/100	1000	b	3
NTMG25P30-11	4	7.5/30	13.3	0.11	120	1:30	680	750/300	4000	b	3
NTMG25P10-50	4	7.5/10	5	0.5	10	1:10	720	400/100	1100	b	4
NTMG25P76-25	4	15/76	5	0.25	20	1:76	430	720/200	5000	b	5
NTMG25P60-12	2	7.5/60	12	0.12	100	1:60	650	2200/200	5000	a	6

## Typical Outline



## Wiring Diagram



Ø35mm

Precision Type

Step Angle Accuracy	±8% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



## Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Gear Ratio	No-load Starting Freq.	Pull-in Torque	Holding Torque	Wiring Diagram	Drawing
		°	V/Ø	A/Ø	Ω/Ø		pps	g.cm/pps	g.cm	Wdg	Fig
NTMG35P19-04	4	7.5/19	12	0.4	30	1:19	360	2500/200	10000	a	1
NTMG35P08-04	4	7.5/8.4	12	0.4	30	1:8.4	360	800/300	2000	a	2
NTMG35P30-04	4	7.5/30	12	0.4	30	1:30	360	2500/300	12000	a	2
NTMG35P60-04	4	7.5/60	12	0.4	30	1:60	360	3000/300	10000	a	2
NTMG35P120-04	4	7.5/120	12	0.4	30	1:120	360	8000/300	10000	a	2
NTMG35P16-23	4	7.5/16	12	0.23	52.5	1:16	470	1300/200	5000	a	3
NTMG35P19-13	4	7.5/19	24	0.13	185	1:19	430	1300/200	4000	a	4

## Typical Outline

Fig 1

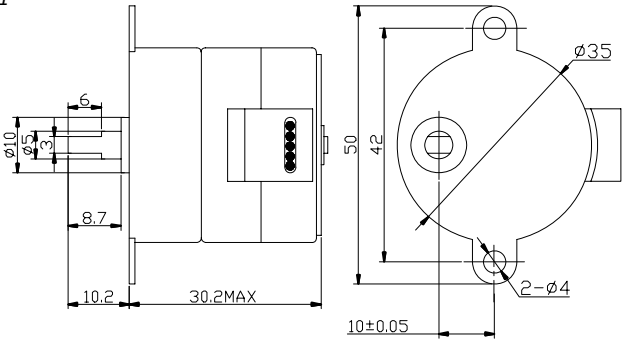


Fig 2

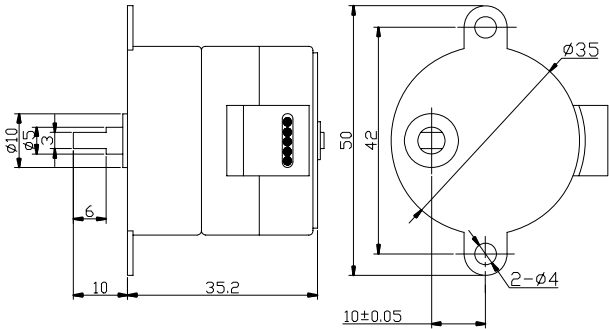


Fig 3

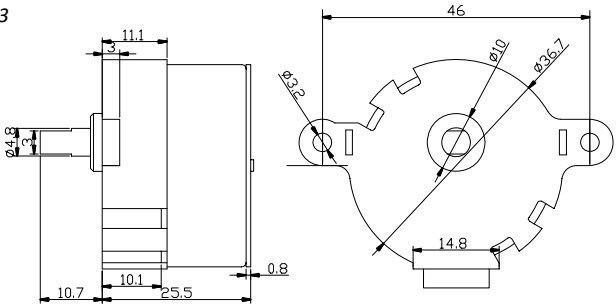
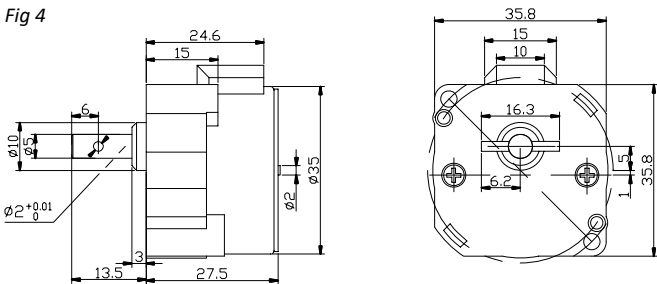
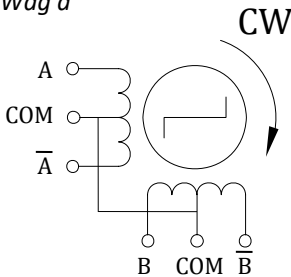


Fig 4



## Wiring Diagram

Wdg a



Ø42mm

### Precision Type

Step Angle Accuracy	±8% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Ambient Temperature	-10°C ~ 50°C
Insulation Resistance	100 MΩ Min.(At 500VDC)
Dielectric Strength	RMS for 2 Sec(At 650±50VAC)
Insulation Class	Class E



## ■ Specifications

Model	No. of Phase	Step Angle	Voltage	Current	Resistance	Gear Ratio	No-load Starting Freq.	Pull-in Torque	Holding Torque	Wiring Diagram	Drawing
		°	V/∅	A/∅	Ω/∅		pps	g.cm/pps	g.cm	Wdg	Fig
NTMG42P24-27	4	7.5/24	12	0.445	27	1:24	380	1600/200	13000	b	1
NTMG42P24-54	2	7.5/24	12	0.222	54	1:24	280	1200/200	10000	a	2
NTMG42P25-08	4	7.5/25	24	0.08	300	1:25	260	1000/100	10000	b	3
NTMG42P30-66	4	15/30	12	0.182	66	1:30	240	1700/100	5000	c	4

## ■ Typical Outline

Fig 1

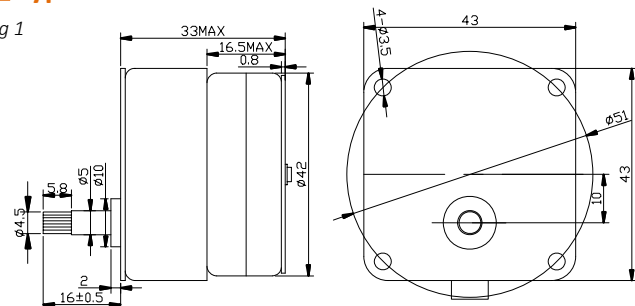
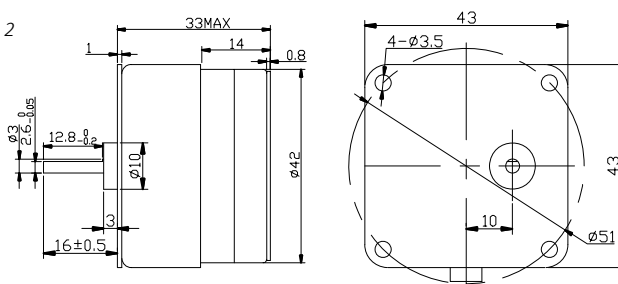


Fig 2



*Fig 3*

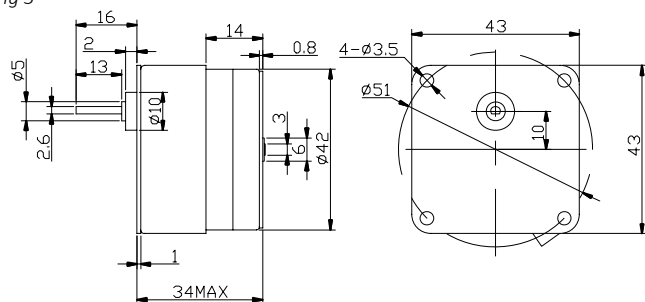
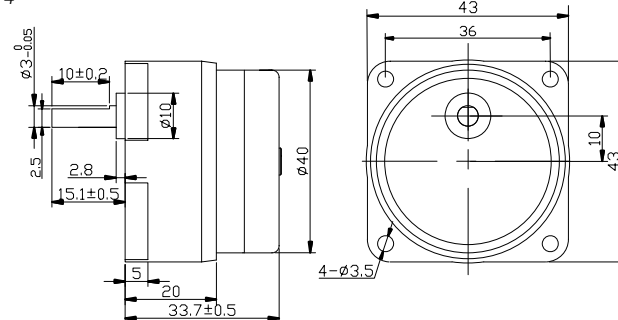
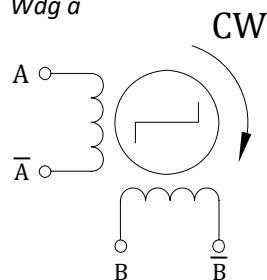


Fig 4

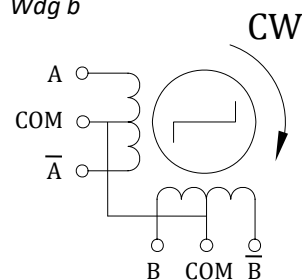


## ■ Wiring Diagram

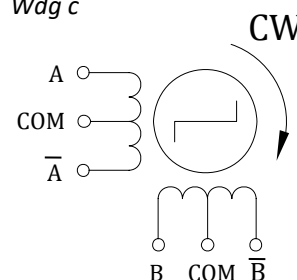
*Wdg a*



*Wdg b*



*Wdg c*





## *NST/NSR/NSV/NSK Series Stepper Drive*



Description	F-1	NST8072	F-8
Applications	F-1	NST8060AC	F-9
Part Number	F-1	N3ST8082	F-10
Standard Versions	F-1	NSR3015	F-11
General Specifications	F-2	NSR4015	F-12
Control Signal Connections	F-2	NSR4020	F-13
Typical Connections	F-2	NSR5042	F-14
NST4030	F-3	NSR8078	F-15
NST4042	F-4	NSR8078AC	F-16
NST5042	F-5	NSK5045	F-17
NST5056	F-6	NSV3015	F-18
NST8056	F-7		



## Description

Novara provides four types of stepper drives, including NST series, NSR series, NSV series and NSK series. The NST series of digital stepper drives are based on powerful 32-bit DSP control technology. Their features include super-low stepping noise, anti-resonance, low-speed ripple smoothing, and low motor heating. The NSR series of analog stepper drives adopt precise analog current control and are characterized by superior high-speed torque, relatively low stepping noise and low motor heating. The NSV series of voltage control stepper drives adjust the velocity via the external potentiometer or analog 0-5V input, which could ideally replace the brushless motor with gearbox due to its high torque and less motor noise at low speed. The NSK series of digital stepper drives are DSP-based innovative products. Their features include super-low stepping noise, anti-resonance, low-speed ripple smoothing and low motor heating.

## Applications

Novara's NST/NSR/NSV/NSK series stepper drives are suitable for driving a wide range of stepper motors, from frame size NEMA 8 to NEMA 42. Typical applications include CNC routers, laser cutters, laser markers, medical equipment, X-Y tables, measurement equipment, 3D printers, and many other industrial and office automation applications.

## Part Number

<b>N</b>					
<b>Novara</b>	<b>No. of Phase</b> Blank: 2-phase 3: 3-phase 5: 5-phase	<b>Driver Type</b> ST: ST Series SR: SR Series SK: SK Series SV: SV Series	<b>Max. Input Voltage</b> 30: 30VDC 40: 40VDC .....	<b>Max. Output Current</b> 15: 1.5A 42: 4.2A .....	<b>Voltage Type</b> Blank: DC Power AC: AC power

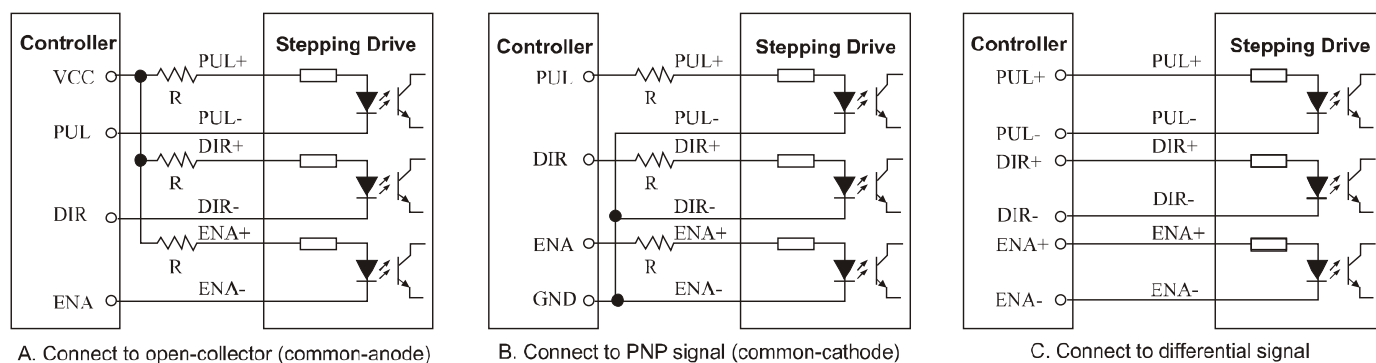
## Standard Versions

Model	Phase	Output Current	Operating Voltage		Microstep Resolutions	Driving Motors	Size	Weight
		A	AC	DC		NEMA	mm	Kg
<b>NST Series:</b>								
NST4030	2	0.1-3.0	N/A	12-32	1-512	8-17	92.6×56×21	0.09
NST4042	2	0.5-4.2	N/A	18-40	1-512	8-23	116×69×26.5	0.20
NST5042	2	0.5-4.2	N/A	20-50	1-128, 5-125	17-24	118×75.5×34	0.28
NST5056	2	0.5-5.6	N/A	18-50	1-512	17-24	118×75.5×34	0.28
NST8056	2	0.5-5.6	N/A	24-80	1-512	23-34	118×75.5×34	0.28
NST8072	2	0.5-7.2	N/A	24-80	1-512	23-34	118×75.5×34	0.28
NST8060AC	2	2.4-7.2	20-80	24-110	2-256, 5-200	34-42	151×97×48	0.40
N3ST8082	3	0.5-8.2	N/A	24-80	1-512	17-34	118×75.5×34	0.28
<b>NSR Series:</b>								
NSR3015	2	0.2-1.5	N/A	10-30	1-16	8-17	68.5×59×27.5	0.06
NSR4015	2	0.21-1.5	N/A	18-40	1-64	8-17	86×55×20	0.10
NSR4020	2	0.25-2.0	N/A	18-40	1-128	8-17	86×55×20	0.10
NSR5042	2	1.0-4.2	N/A	18-50	2-128, 5-125	17-24	118×75.5×34	0.28
NSR8078	2	2.8-7.8	N/A	24-80	2-256, 5-250	34-42	139×97×48	0.55
NSR8078AC	2	2.8-7.8	18-80	24-110	2-256, 5-250	34-42	139×97×48	0.55
<b>NSK Series:</b>								
NSK5045	2	1.0-4.5	N/A	20-50	1-128, 5-125	17-24	118×71×27	0.24
<b>NSV Series:</b>								
NSV3015	2	0.2-1.5	N/A	10-30	16	8-17	68.5×59×27.5	0.06

## General Specifications

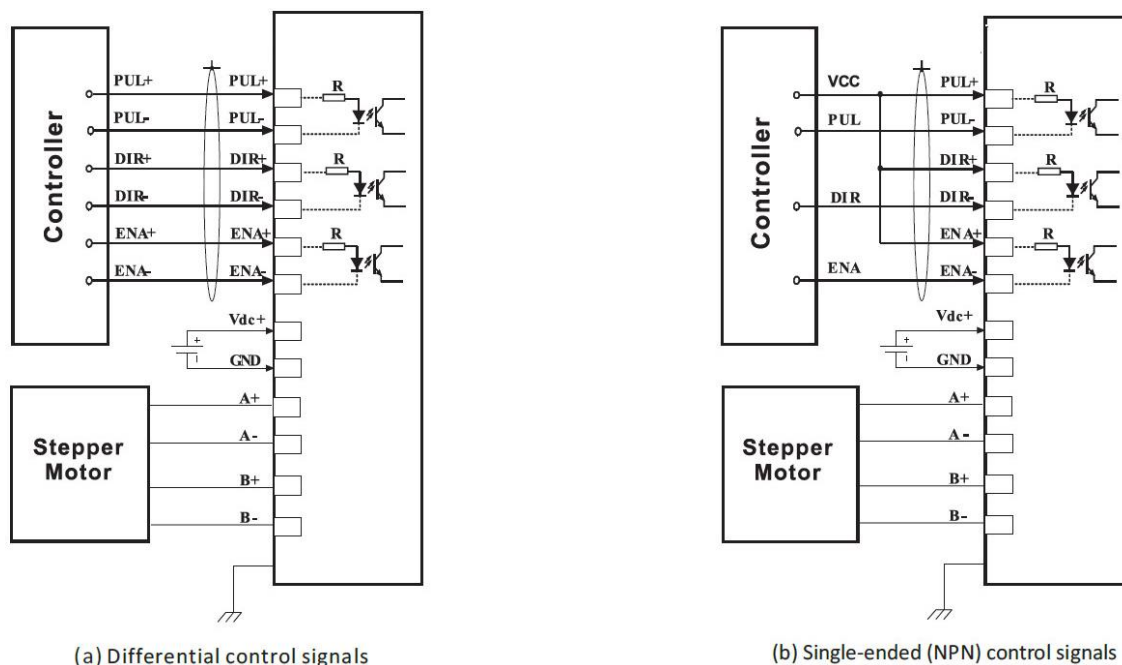
<b>Heat Sinking Method</b>	Natural cooling or forced cooling	
<b>Operating Environment</b>	Environment	No corrosive gas, dust, water or oil
	Ambient Temperature	0 to +50 °C (+32 to +122 °F) (non-freezing)
	Humidity	90% or less (non-condensing)
	Operating Temperature	70°C Max
	Vibration	5.9m/s <sup>2</sup> Max
<b>Storage Temperature</b>	-10 to +70 °C (+14 to +158 °F) (non-freezing)	

## Control Signal Connections (NST Series)



Series connect resistors for current-limiting when +12V or +24V used. R=1K (>0.25W) if VCC=12V; R=2K (>0.25W) if VCC=24V. Make sure that the current through the opto-coupler is between 7 mA and 16 mA.

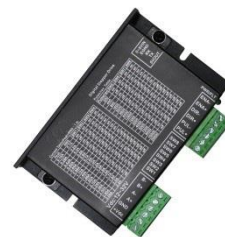
## Typical Connections (NST Series)



## Introduction

The NST4030 is a versatility fully digital stepping driver based on ARM with advanced control algorithm. The NST4030 is the next generation of digital stepping motor controls. It brings a unique level of system smoothness, providing optimum torque and nulls mid-range instability. Motor self-test and parameter auto-setup technology offers optimum responses with different motors and easy-to-use. The driven motors can run with much smaller noise, lower heating, smoother movement than most of the drivers in the markets. Its unique features make the NST4030 an ideal solution for applications that require low-speed smoothness.

The stepper drive NST4030 is suitable for a wide range of stepping motors from NEMA size 8 to 17, which are used in various kinds of machines, such as 3D printers, X-Y tables, labeling machines, laser cutters, engraving machines, pick-place devices, and etc.



## Electrical Specifications

Parameters	Min	Typical	Max	Unit
Output current	0.14	-	3.0 (2.2RMS)	A
Supply voltage	+12	+24	+32	VDC
Logic signal current	6	10	16	mA
Pulse input frequency	0	-	160	kHz
Isolation resistance	500			MΩ

## Function Description

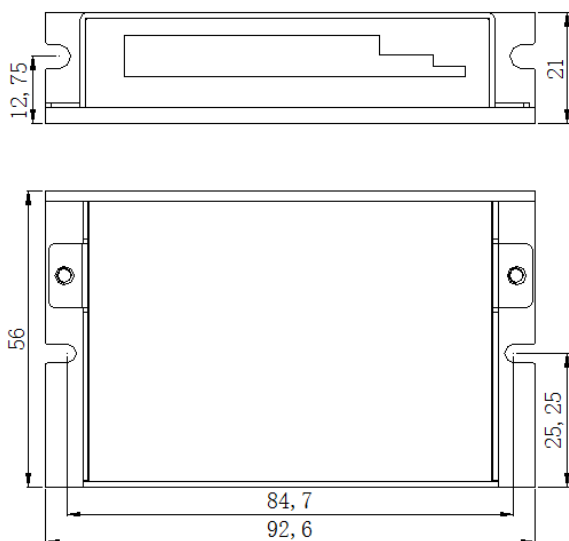
Function	Description
Microstep Setting	Microstep resolution is programmable. When not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch. In order to avoid losing steps, do not change the microstep resolution on the fly.
Current Setting	Output current is programmable. When not in software configured mode, operating current is set by SW1, 2, 3, 4 of the DIP switch, which is Up to 3.0A.
Automatic Standstill Current Reduction	The current will be automatically reduced to 50% of the selected operating current 0.4 second after the last pulse.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. EN+ and EN- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +12 to 24VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

Microstep resolution and output current are programmable. When not in software configured mode, the drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Mechanical Dimension



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3	SW4
0.14A	0.1A	ON	ON	ON	ON
0.28A	0.2A	OFF	ON	ON	ON
0.42A	0.3A	ON	OFF	ON	ON
0.60A	0.5A	OFF	OFF	ON	ON
0.84A	0.6A	ON	ON	OFF	ON
0.98A	0.7A	OFF	ON	OFF	ON
1.12A	0.8A	ON	OFF	OFF	ON
1.40A	1.0A	OFF	OFF	OFF	ON
1.68A	1.2A	ON	ON	ON	OFF
1.82A	1.3A	OFF	ON	ON	OFF
2.10A	1.5A	ON	OFF	ON	OFF
2.24A	1.6A	OFF	OFF	ON	OFF
2.38A	1.7A	ON	ON	OFF	OFF
2.52A	1.8A	OFF	ON	OFF	OFF
2.80A	2.0A	ON	OFF	OFF	OFF
3.00A	2.2A	OFF	OFF	OFF	OFF

## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1-512	Default/Software configured	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
18	3600	OFF	ON	OFF	ON
32	6400	ON	OFF	OFF	ON
64	12800	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
36	7200	ON	ON	OFF	OFF
40	8000	OFF	ON	OFF	OFF
50	10000	ON	OFF	OFF	OFF
100	20000	OFF	OFF	OFF	OFF

## Introduction

The stepper drive NST4042 is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls mid-range instability and good high speed performance. Motor auto-identification and parameter auto configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive NST4042 is suitable for a wide range of stepping motors, from NEMA 14 to NEMA 23. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the NST4042 an ideal solution for applications that require low-speed smoothness and good high speed performance.



## Electrical Specifications

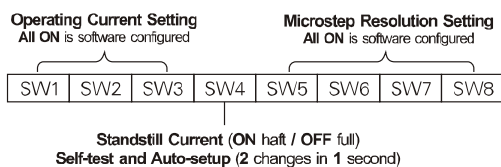
Parameters	Min	Typical	Max	Unit
Output current	0.5	-	4.2 (3.0 RMS)	A
Supply voltage	+20	+36	+40	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	Microstep resolution is programmable. When not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch. In order to avoid losing steps, do not change the microstep resolution on the fly.
Current Setting	Output current is programmable. When not in software configured mode, operating current is set by SW1,2,3 of the DIP switch, which is Up to 4.2A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction, self-test and auto-setup function. When the former active, the current will be automatically reduced to 60% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 36% (due to $P=I^2 \cdot R$ ) of the original value.
Self-test and Auto-setup	If the user changes the status/position of SW4 twice in 1 second, the drive will self-test the driving motor and auto setup control parameters, offering optimum performance with different motors.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +18 to 36VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

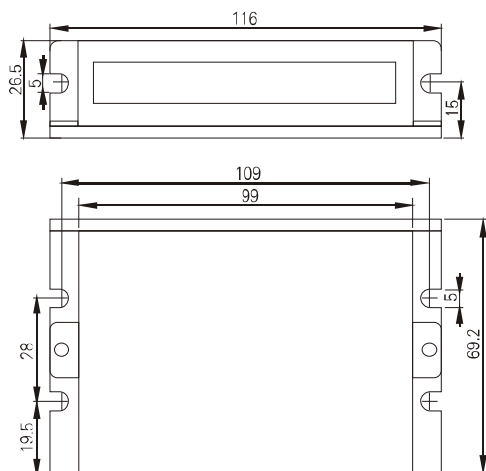
Microstep resolution and output current are programmable. When not in software configured mode, the drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
Default/software configured (0.5-4.2A)		ON	ON	ON
1.46A	1.04A	OFF	ON	ON
1.91A	1.36A	ON	OFF	ON
2.37A	1.69A	OFF	OFF	ON
2.84A	2.03A	ON	ON	OFF
3.31A	2.36A	OFF	ON	OFF
3.76A	2.69A	ON	OFF	OFF
4.20A	3.00A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1-512	Default/Software configured	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	OFF	OFF	OFF

## Introduction

The stepper drive NST5042 is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls mid-range instability and good high speed performance. Motor auto-identification and parameter auto configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive NST5042 is suitable for a wide range of stepping motors, from NEMA 14 to NEMA 24. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the NST5042 an ideal solution for applications that require low-speed smoothness and good high speed performance.



## Electrical Specifications

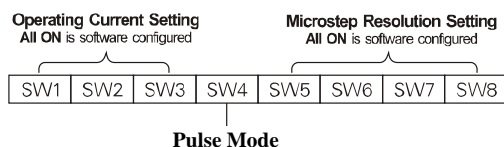
Parameters	Min	Typical	Max	Unit
Output current	0.5	-	4.2 (3.0 RMS)	A
Supply voltage	+20	+36	+50	VDC
Logic signal current	6	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	16 selectable microstep resolutions up to 25,600 steps/rev. Set by SW5, 6, 7, 8 of the DIP switch.
Current Setting	Operating current is set by SW1,2,3 of the DIP switch, which is Up to 4.2A.
Automatic Standstill Current Reduction	The current will be automatically reduced to 50% of the selected operating current 0.4 second after the last pulse.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +24 to 48VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

The drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



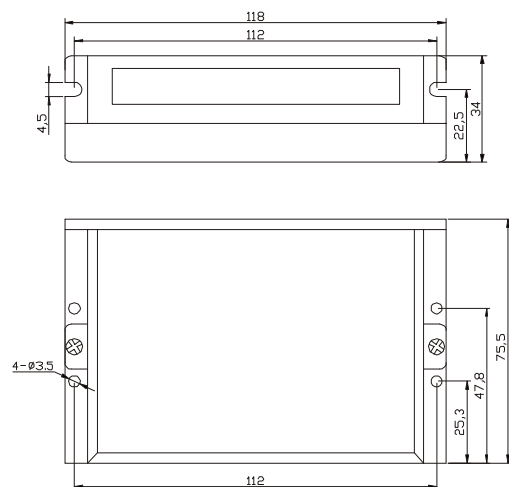
## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
Default [0.7A]		ON	ON	ON
1.46A	1.04A	OFF	ON	ON
1.91A	1.36A	ON	OFF	ON
2.37A	1.69A	OFF	OFF	ON
2.84A	2.03A	ON	ON	OFF
3.31A	2.36A	OFF	ON	OFF
3.76A	2.69A	ON	OFF	OFF
4.20A	3.00A	OFF	OFF	OFF

## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1	200	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	OFF	OFF	OFF

## Mechanical Dimension



## Pulse Mode Settings

SW4	Pulse Mode
ON	CW + CCW
OFF	PUL + DIR

## Introduction

The stepper drive NST5056 is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls mid-range instability and good high speed performance. Motor auto-identification and parameter auto-configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive NST5056 is suitable for a wide range of stepping motors, from NEMA 17 to NEMA 23. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the NST5056 an ideal solution for applications that require low-speed smoothness and good high speed performance.



## Electrical Specifications

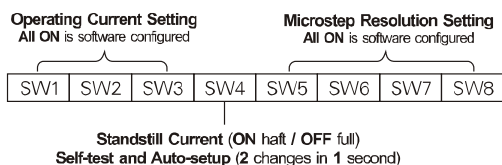
Parameters	Min	Typical	Max	Unit
Output current	0.5	-	5.6 (4.0 RMS)	A
Supply voltage	+20	+36	+50	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	Microstep resolution is programmable. When not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch. In order to avoid losing steps, do not change the microstep resolution on the fly.
Current Setting	Output current is programmable. When not in software configured mode, operating current is set by SW1,2,3 of the DIP switch, which is Up to 5.6A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction, self-test and auto-setup function. When the former active, the current will be automatically reduced to 60% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 36% (due to $P=I^2 \cdot R$ ) of the original value.
Self-test and Auto-setup	If the user changes the status/position of SW4 twice in 1 second, the drive will self-test the driving motor and auto setup control parameters, offering optimum performance with different motors.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +20 to 45VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

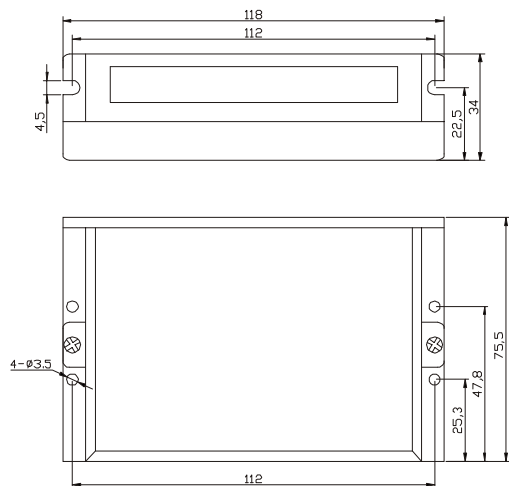
Microstep resolution and output current are programmable. When not in software configured mode, the drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
Default/software configured (0.5-5.6A)		OFF	OFF	OFF
2.1A	1.5A	ON	OFF	OFF
2.7A	1.9A	OFF	ON	OFF
3.2A	2.3A	ON	ON	OFF
3.8A	2.7A	OFF	OFF	ON
4.3A	3.1A	ON	OFF	ON
4.9A	3.5A	OFF	ON	ON
5.6A	4.0A	ON	ON	ON

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1-512	Default/Software configured	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	OFF	OFF	OFF

## Introduction

The stepper drive NST8056 is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls mid-range instability and good high speed performance. Motor auto-identification and parameter auto-configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive NST8056 is suitable for a wide range of stepping motors, from NEMA 23 to NEMA 34. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the NST8056 an ideal solution for applications that require low-speed smoothness and good high speed performance.



## Electrical Specifications

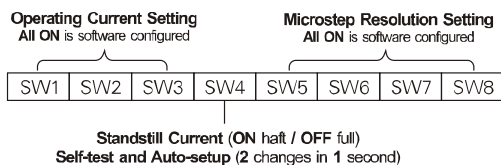
Parameters	Min	Typical	Max	Unit
Output current	0.5	-	5.6 (4.0 RMS)	A
Supply voltage	+20	-	+80	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	Microstep resolution is programmable. When not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch. In order to avoid losing steps, do not change the microstep resolution on the fly.
Current Setting	Output current is programmable. When not in software configured mode, operating current is set by SW1,2,3 of the DIP switch, which is Up to 5.6A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction, self-test and auto-setup function. When the former active, the current will be automatically reduced to 60% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 36% (due to $P=I^2 \cdot R$ ) of the original value.
Self-test and Auto-setup	If the user changes the status/position of SW4 twice in 1 second, the drive will self-test the driving motor and auto setup control parameters, offering optimum performance with different motors.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +20 to 68VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

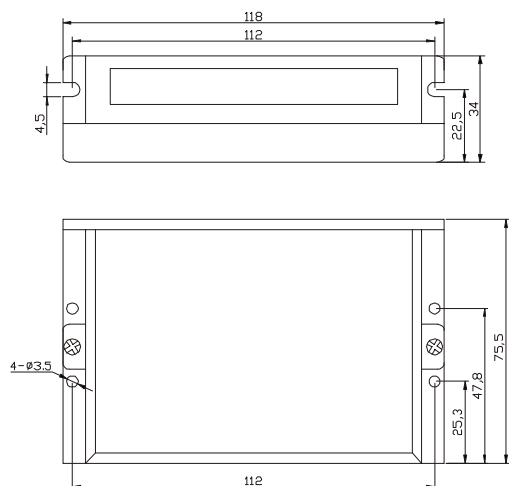
Microstep resolution and output current are programmable. When not in software configured mode, the drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
Default/software configured (0.5-5.6A)		OFF	OFF	OFF
2.1A	1.5A	ON	OFF	OFF
2.7A	1.9A	OFF	ON	OFF
3.2A	2.3A	ON	ON	OFF
3.8A	2.7A	OFF	OFF	ON
4.3A	3.1A	ON	OFF	ON
4.9A	3.5A	OFF	ON	ON
5.6A	4.0A	ON	ON	ON

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1-512	Default/Software configured	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	OFF	OFF	OFF

## Introduction

The stepper drive NST8072 is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls mid-range instability and good high speed performance. Motor auto-identification and parameter auto-configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive NST8072 is suitable for a wide range of stepping motors, from NEMA 23 to NEMA 34. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the NST8072 an ideal solution for applications that require low-speed smoothness and good high speed performance.



## Electrical Specifications

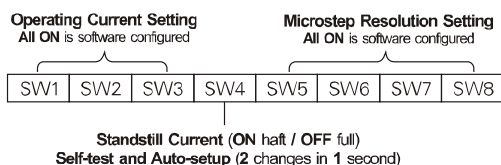
Parameters	Min	Typical	Max	Unit
Output current	0.5	-	7.2 (6.0 RMS)	A
Supply voltage	+20	+48	+75	VDC
Logic signal current	6	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	Microstep resolution is programmable. When not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch. In order to avoid losing steps, do not change the microstep resolution on the fly.
Current Setting	Output current is programmable. When not in software configured mode, operating current is set by SW1,2,3 of the DIP switch, which is Up to 7.2A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction, self-test and auto-setup function. When the former active, the current will be automatically reduced to 60% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 36% (due to $P=I^2 \cdot R$ ) of the original value.
Self-test and Auto-setup	If the user changes the status/position of SW4 twice in 1 second, the drive will self-test the driving motor and auto setup control parameters, offering optimum performance with different motors.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +24 to 75VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

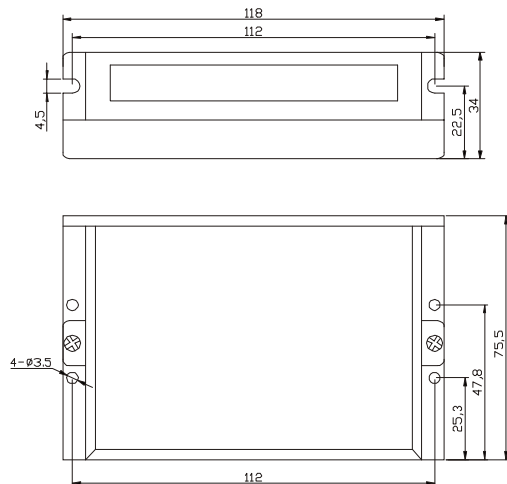
Microstep resolution and output current are programmable. When not in software configured mode, the drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
Default/software configured (0.5-7.2A)		ON	ON	ON
3.08A	2.57A	OFF	ON	ON
3.77A	3.14A	ON	OFF	ON
4.45A	3.71A	OFF	OFF	ON
5.14A	4.28A	ON	ON	OFF
5.83A	4.86A	OFF	ON	OFF
6.52A	5.43A	ON	OFF	OFF
7.20A	6.00A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1-512	Default/Software configured	ON	ON	ON	ON
2	400	ON	ON	ON	ON
4	800	OFF	ON	ON	ON
8	1600	ON	OFF	ON	ON
16	3200	OFF	OFF	ON	ON
32	6400	ON	ON	OFF	ON
64	12800	OFF	ON	OFF	ON
128	25600	ON	OFF	OFF	ON
256	51200	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
200	40000	OFF	OFF	OFF	OFF

## Introduction

The stepper drive NST8060AC is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls mid-range instability and good high speed performance. Motor auto-identification and parameter auto configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive NST8060AC is suitable for a wide range of stepping motors, from NEMA 23 to NEMA 42. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the NST8060AC an ideal solution for applications that require low-speed smoothness and good high speed performance.



## Electrical Specifications

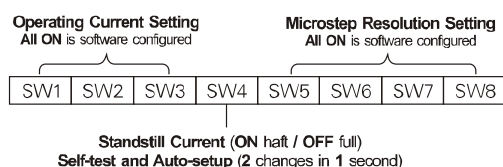
Parameters	Min	Typical	Max	Unit
Output current	2.4	-	7.2 (6.0 RMS)	A
Supply voltage	20	48	80	VAC
	+24	+72	+110	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	16 selectable microstep resolutions up to 51,200 steps/rev. Set by SW5, 6, 7, 8 of the DIP switch.
Current Setting	Operating current is set by SW1,2,3 of the DIP switch, which is Up to 7.2A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction, self-test and auto-setup function. When the former active, the current will be automatically reduced to 60% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 36% (due to $P=I^2 \cdot R$ ) of the original value.
Self-test and Auto-setup	If the user changes the status/position of SW4 twice in 1 second, the drive will self-test the driving motor and auto setup control parameters, offering optimum performance with different motors.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of 24 to 75VAC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

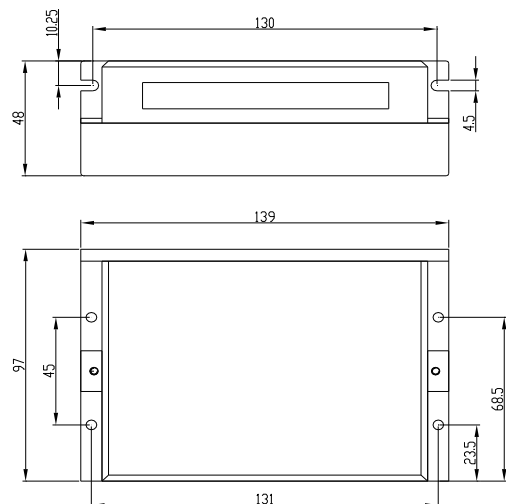
The drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
2.40A	2.00A	ON	ON	ON
3.08A	2.57A	OFF	ON	ON
3.77A	3.14A	ON	OFF	ON
4.45A	3.71A	OFF	OFF	ON
5.14A	4.28A	ON	ON	OFF
5.83A	4.86A	OFF	ON	OFF
6.52A	5.43A	ON	OFF	OFF
7.20A	6.00A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
2	400	ON	ON	ON	ON
4	800	OFF	ON	ON	ON
8	1600	ON	OFF	ON	ON
16	3200	OFF	OFF	ON	ON
32	6400	ON	ON	OFF	ON
64	12800	OFF	ON	OFF	ON
128	25600	ON	OFF	OFF	ON
256	51200	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
200	40000	OFF	OFF	OFF	OFF

## Introduction

The NST22082AC is a high voltage, fully digital stepper drive developed with advanced DSP control algorithm based on the latest motion control technology. It has achieved a unique level of system smoothness, providing optimal torque and nulls mid-range instability. Its motor auto-identification and parameter auto-configuration feature offers quick setup to optimal modes with different motors.

Compared with traditional analog drives, NST22082AC can drive a stepper motor at much lower noise, lower heating, and smoother movement. Its unique features make NST22082AC an ideal choice for high requirement applications.

The stepper drive NST22082AC is suitable for a wide range of stepper motors, from NEMA size 34 to 51. It can be used in various applications such as laser cutters, laser markers, high precision X-Y tables, labeling machines, CNC router, etc. Its unique features make the NST22082AC an ideal choice for applications that require both low-speed smoothness and high speed performances.



## Electrical Specifications

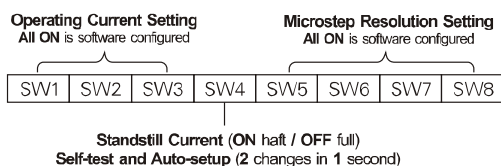
Parameters	Min	Typical	Max	Unit
Output current	0.5	-	8.2 (5.9 RMS)	A
Supply voltage	80	220	230	VAC
	+115	+310	+310	VDC
Logic signal current	7	10	20	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	Microstep resolution is programmable. When not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch. In order to avoid losing steps, do not change the microstep resolution on the fly.
Current Setting	Operating current is set by SW1,2,3 of the DIP switch, which is Up to 8.2A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction, self-test and auto-setup function. When the former active, the current will be automatically reduced to 60% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 36% (due to $P=I^2 \cdot R$ ) of the original value.
Self-test and Auto-setup	If the user changes the status/position of SW4 twice in 1 second, the drive will self-test the driving motor and auto setup control parameters, offering optimum performance with different motors.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of 80 to 220VAC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

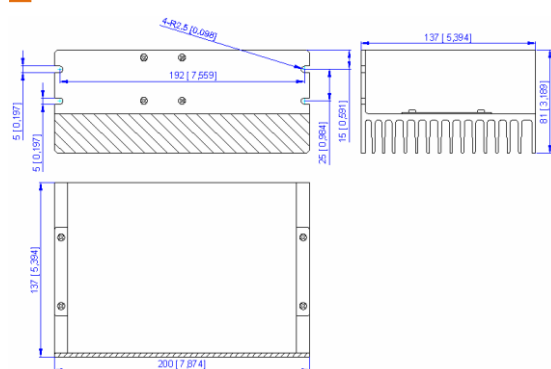
The drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
Default/Software configured (0.5 to 8.2A)		OFF	OFF	OFF
2.2A	1.6A	ON	OFF	OFF
3.2A	2.3A	OFF	ON	OFF
4.2A	3.2A	ON	ON	OFF
5.2A	3.7A	OFF	OFF	ON
6.3A	4.4A	ON	OFF	ON
7.2A	5.2A	OFF	ON	ON
8.2A	5.9A	ON	ON	ON

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1 to 512	Default/Software configured	ON	ON	ON	ON
1	200 (when not configured with software)	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	off	OFF	OFF

## Introduction

The stepper drive N3ST8082 is a versatility fully digital 3-phase stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls midrange instability and good high speed performance. Motor auto-identification and parameter auto configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive N3ST8082 is suitable for a wide range of stepping motors, from NEMA 17 to NEMA 34. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the N3ST8082 an ideal solution for applications that require low-speed smoothness and good high speed performance.



## Electrical Specifications

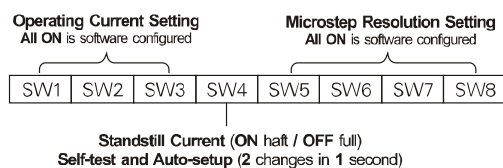
Parameters	Min	Typical	Max	Unit
Output current	0.5	-	8.2 (6.0 RMS)	A
Supply voltage	+24	+36	+75	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	Microstep resolution is programmable. When not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch. In order to avoid losing steps, do not change the microstep resolution on the fly.
Current Setting	Output current is programmable. When not in software configured mode, operating current is set by SW1,2,3 of the DIP switch, which is Up to 8.2A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction, self-test and auto-setup function. When the former active, the current will be automatically reduced to 60% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 36% (due to $P=I^2 \cdot R$ ) of the original value.
Self-test and Auto-setup	If the user changes the status/position of SW4 twice in 1 second, the drive will self-test the driving motor and auto setup control parameters, offering optimum performance with different motors.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +24 to 75VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

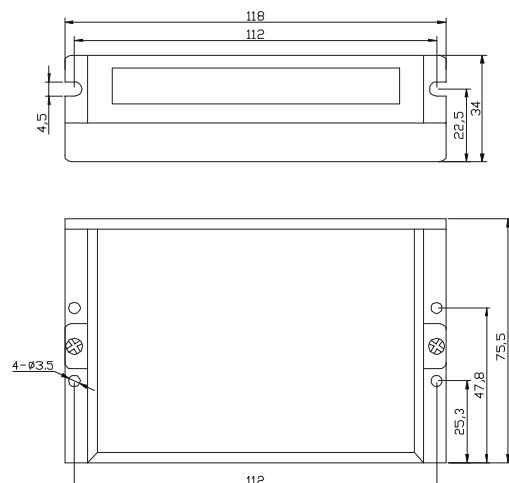
Microstep resolution and output current are programmable. When not in software configured mode, the drive uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
Default/software configured (0.5-8.2A)		ON	ON	ON
4.2A	3.0A	OFF	ON	ON
4.9A	3.5A	ON	OFF	ON
5.6A	4.0A	OFF	OFF	ON
6.3A	4.5A	ON	ON	OFF
7.0A	5.0A	OFF	ON	OFF
7.8A	5.5A	ON	OFF	OFF
8.2A	6.0A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
1-512	Default/Software configured	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	OFF	OFF	OFF

## Introduction

The stepper drive NSR3015 is a very small size high performance microstepping drive based on one of the most advanced technologies in the world today. It's suitable for driving small and medium 2-phase and 4-phase hybrid stepping motors. By using advanced bipolar constant-current chopping technique, it can output higher speed and more power from the same motor, compared with traditional drives such as L/R drives.

The stepper drive NSR3015 is suitable for a wide range of stepping motors from NEMA size 8 to 17, which are used in various kinds of machines, such as 3D printers, X-Y tables, labeling machines, laser cutters, engraving machines, pick-place devices, and etc.



## Electrical Specifications

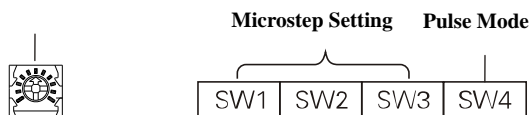
Parameters	Min	Typical	Max	Unit
Output current	0.2	-	1.5 (1.06RMS)	A
Supply voltage	+10	+24	+30	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

## Function Description

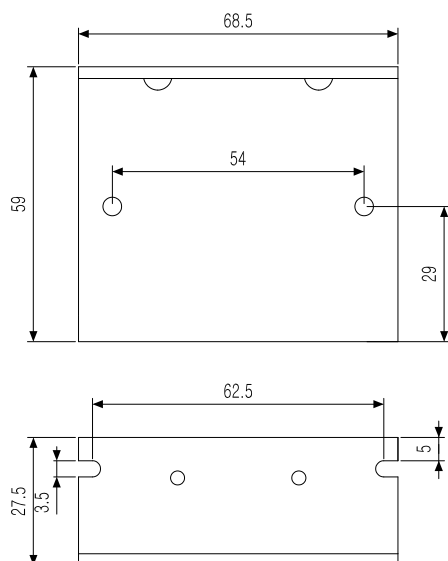
Function	Description
Microstep Setting	5 selectable microstep resolutions up to 3,200 steps/rev. Set by SW1, 2, 3 of the DIP switch.
Current Setting	The potentiometer pointer is used to set the operating current, which is up to 1.5 A.
Automatic Standstill Current Reduction	The current will be automatically reduced to 50% of the selected operating current 0.4 second after the last pulse.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. EN+ and EN- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +12 to 24VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

This drive NSR3015 uses a circular potentiometer pointer and a 4-bit DIP switch to set motor operating current, microstep resolution and pulse mode, as shown below:



## Mechanical Dimension



## Operating Current Settings

Peak Current	RMS Current	Position
0.20A	0.14A	1
0.40A	0.28A	2
0.60A	0.42A	3
0.75A	0.53A	4
0.87A	0.62A	5
1.07A	0.76A	6
1.12A	0.79A	7
1.29A	0.91A	8
1.50A	1.06A	9

## Microstep Resolution Settings

Microstep	Steps/Rev.	SW1	SW2	SW3
1	200	ON	ON	ON
2	400	OFF	ON	ON
4	800	ON	OFF	ON
8	1,600	OFF	OFF	ON
16	3,200	ON	ON	OFF

## Pulse Mode Settings

SW4	Pulse Mode
ON	PUL + DIR
OFF	CW + CCW

## Introduction

The stepper drive NSR4015 is a very small size high performance microstepping driver based on one of the most advanced technologies in the world today. It's suitable for driving small and medium 2-phase and 4-phase hybrid stepping motors. By using advanced bipolar constant-current chopping technique, it can output more speed and power from the same motor, compared with traditional drivers such as L/R drivers.

The stepper drive NSR4015 is suitable for a wide range of stepping motors from NEMA size 8 to 17, which used in various kinds of machines, such as X-Y tables, labeling machines, laser cutters, engraving machines, pick-place devices, and etc. It's specially adapted to the applications desired with low vibration, high speed and high precision.



## Electrical Specifications

Parameters	Min	Typical	Max	Unit
Output current	0.21	-	1.5 (1.07 RMS)	A
Supply voltage	+18	+24	+40	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	100	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	7 selectable microstep resolutions up to 12,800 steps/rev. Set by SW4, 5, 6 of the DIP switch.
Current Setting	The first three bits (SW1, 2, 3) of the DIP switch are used to set the operating current, which is up to 1.5 A.
Control Signals	PUL is for the pulse command signal. DIR is for the direction control signal. ENA is for the enable/disable control signal. Series connect resistors for current-limiting when +12V or +24V is used.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with theoretical output of +18 to +36VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

This drive NSR4015 uses a 6-bit DIP switch to set microstep resolution and motor operating current, as shown below:

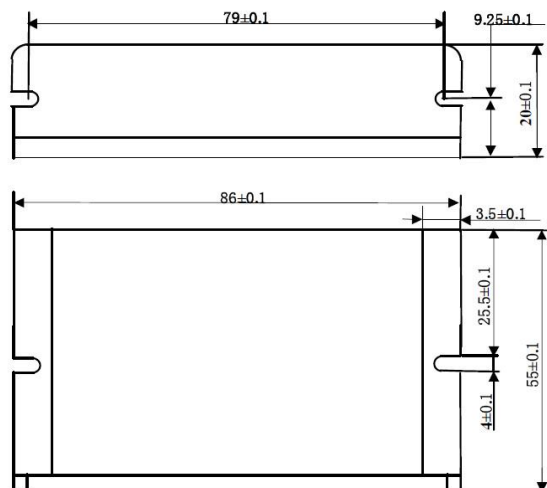
### Operating Current Setting      Microstep Setting

SW1	SW2	SW3	SW4	SW5	SW6
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## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
0.21A	0.15A	OFF	ON	ON
0.42A	0.30A	ON	OFF	ON
0.63A	0.45A	OFF	OFF	ON
0.84A	0.60A	ON	ON	OFF
1.05A	0.75A	OFF	ON	OFF
1.26A	0.90A	ON	OFF	OFF
1.50A	1.07A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW4	SW5	SW6
1	200	ON	ON	ON
2	400	OFF	ON	ON
4	800	ON	OFF	ON
8	1,600	OFF	OFF	ON
16	3,200	ON	ON	OFF
32	6,400	OFF	ON	OFF
64	12,800	ON	OFF	OFF

## Introduction

The stepper drive NSR4020 is a very small size high performance microstepping driver based on one of the most advanced technologies in the world today. It's suitable for driving small and medium 2-phase and 4-phase hybrid stepping motors. By using advanced bipolar constant-current chopping technique, it can output more speed and power from the same motor, compared with traditional drivers such as L/R drivers.

The stepper drive NSR4020 is suitable for a wide range of stepping motors from NEMA size 8 to 17, which used in various kinds of machines, such as X-Y tables, labeling machines, laser cutters, engraving machines, pick-place devices, and etc. It's specially adapted to the applications desired with low vibration, high speed and high precision.



## Electrical Specifications

Parameters	Min	Typical	Max	Unit
Output current	0.25	-	2.0 (1.43 RMS)	A
Supply voltage	+18	+24	+40	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	100	kHz
Isolation resistance	500			MΩ

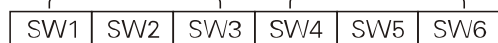
## Function Description

Function	Description
<b>Microstep Setting</b>	8 selectable microstep resolutions up to 25,600 steps/rev. Set by SW4, 5, 6 of the DIP switch.
<b>Current Setting</b>	The first three bits (SW1, 2, 3) of the DIP switch are used to set the operating current, which is up to 2.0 A.
<b>Control Signals</b>	PUL is for the pulse command signal. DIR is for the direction control signal. ENA is for the enable/disable control signal. Series connect resistors for current-limiting when +12V or +24V is used.
<b>Motor Connector</b>	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
<b>Power Connector</b>	Recommended to use power supplies with theoretical output of +18 to +36VDC, leaving space for power fluctuation and back-EMF.
<b>Indicators</b>	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

This drive NSR4020 uses a 6-bit DIP switch to set microstep resolution and motor operating current, as shown below:

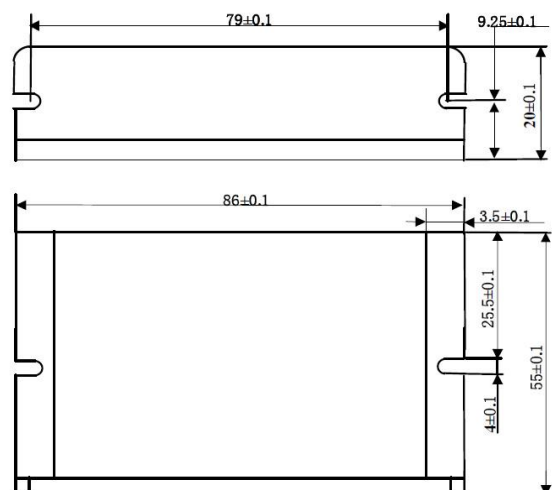
### Operating Current Setting    Microstep Setting



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
0.25A	0.18A	ON	ON	ON
0.50A	0.36A	OFF	ON	ON
0.75A	0.54A	ON	OFF	ON
1.00A	0.71A	OFF	OFF	ON
1.25A	0.89A	ON	ON	OFF
1.50A	1.07A	OFF	ON	OFF
1.75A	1.25A	ON	OFF	OFF
2.00A	1.43A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW4	SW5	SW6
1	200	ON	ON	ON
2	400	OFF	ON	ON
4	800	ON	OFF	ON
8	1,600	OFF	OFF	ON
16	3,200	ON	ON	OFF
32	6,400	OFF	ON	OFF
64	12,800	ON	OFF	OFF
128	25,600	OFF	OFF	OFF

## Introduction

The stepper drive NSR5042 is a high performance microstepping driver based on pure-sinusoidal current control technology. Owing to the advanced technology, it could output smaller noise, lower heating, smoother movement and have better performances at higher speed than most of the drivers in the markets.

The stepper drive NSR5042 is suitable for a wide range of stepping motors, from NEMA size 17 to 24. It can be used in various kinds of machines, such as X-Y tables, engraving machines, labeling machines, laser cutters, pick-place devices, and so on. Particularly adapt to the applications desired with low noise, low heating, high speed and high precision.



## Electrical Specifications

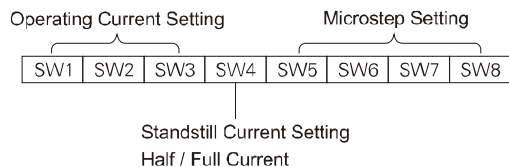
Parameters	Min	Typical	Max	Unit
Output current	1.0	-	4.2 (3.0 RMS)	A
Supply voltage	+18	+36	+50	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	300	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	15 selectable microstep resolutions up to 25,600 steps/rev. Set by SW5, 6, 7, 8 of the DIP switch.
Current Setting	The first three bits (SW1, 2, 3) of the DIP switch are used to set the operating current, which is up to 4.2 A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction function. When this function is active, the current will be automatically reduced to 50% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 25% (due to $P=I^2 \cdot R$ ) of the original value.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal. Series connect resistors for current-limiting when +12V or +24V is used.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with theoretical output of +20 to 45VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

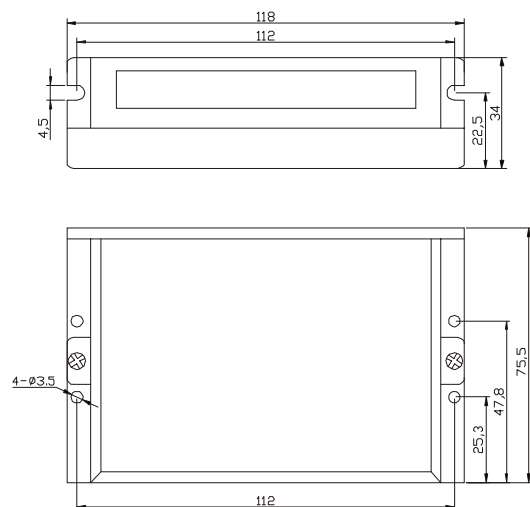
This drive NSR5042 uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
1.00A	0.71A	ON	ON	ON
1.46A	1.04A	OFF	ON	ON
1.92A	1.36A	ON	OFF	ON
2.37A	1.69A	OFF	OFF	ON
2.84A	2.03A	ON	ON	OFF
3.32A	2.36A	OFF	ON	OFF
3.76A	2.69A	ON	OFF	OFF
4.20A	3.00A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1,600	OFF	OFF	ON	ON
16	3,200	ON	ON	OFF	ON
32	6,400	OFF	ON	OFF	ON
64	12,800	ON	OFF	OFF	ON
128	25,600	OFF	OFF	OFF	ON
5	1,000	ON	ON	ON	OFF
10	2,000	OFF	ON	ON	OFF
20	4,000	ON	OFF	ON	OFF
25	5,000	OFF	OFF	ON	OFF
40	8,000	ON	ON	OFF	OFF
50	10,000	OFF	ON	OFF	OFF
100	20,000	ON	OFF	OFF	OFF
125	25,000	OFF	OFF	OFF	OFF

## Introduction

The stepper drive NSR8078 is a high performance microstepping driver based on pure-sinusoidal current control technology. Owing to the advanced technology, it could output smaller noise, lower heating, smoother movement and have better performances at higher speed than most of the drivers in the markets.

The stepper drive NSR8078 is suitable for a wide range of stepping motors from NEMA 34 to NEMA 42, which is widely used in various kinds of machines, such as CNC routers, cutting machines, packing devices, pick-place devices, and so on. Particularly suitable for the applications require low cost, low noise, low heating and high speed performance.



## Electrical Specifications

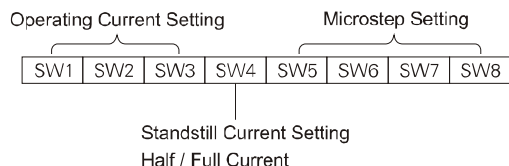
Parameters	Min	Typical	Max	Unit
Output current	2.8	-	7.8 (5.6 RMS)	A
Supply voltage	+24	+60	+80	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	300	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	14 selectable microstep resolutions up to 51,200 steps/rev. Set by SW5, 6, 7, 8 of the DIP switch.
Current Setting	The first three bits (SW1, 2, 3) of the DIP switch are used to set the operating current, which is up to 7.8 A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction function. When this function is active, the current will be automatically reduced to 50% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 25% (due to $P=I^2 \cdot R$ ) of the original value.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal. Series connect resistors for current-limiting when +12V or +24V is used.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with theoretical output of +24 to +72VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

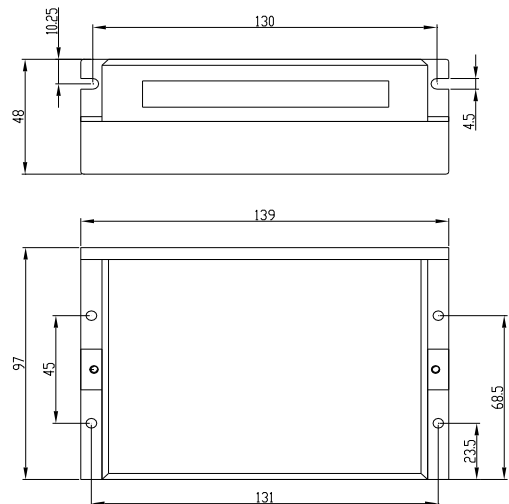
This drive NSR8078 uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
2.8A	2.0A	ON	ON	ON
3.5A	2.5A	OFF	ON	ON
4.2A	3.0A	ON	OFF	ON
4.9A	3.5A	OFF	OFF	ON
5.7A	4.0A	ON	ON	OFF
6.4A	4.6A	OFF	ON	OFF
7.0A	5.0A	ON	OFF	OFF
7.8A	5.6A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
2	400	ON	ON	ON	ON
4	800	OFF	ON	ON	ON
8	1,600	ON	OFF	ON	ON
16	3,200	OFF	OFF	ON	ON
32	6,400	ON	ON	OFF	ON
64	12,800	OFF	ON	OFF	ON
128	25,600	ON	OFF	OFF	ON
256	51,200	OFF	OFF	OFF	ON
5	1,000	ON	ON	ON	OFF
10	2,000	OFF	ON	ON	OFF
25	5,000	ON	OFF	ON	OFF
50	10,000	OFF	OFF	ON	OFF
125	25,000	ON	ON	OFF	OFF
250	50,000	OFF	ON	OFF	OFF

## Introduction

The stepper drive NSR8078AC is a high performance microstepping driver based on pure-sinusoidal current control technology. Owing to the above technology and the self-adjustment technology according to different motors, the driven motors can run with smaller noise, lower heating, smoother movement and have better performances at higher speed than most of the drivers in the markets.

The stepper drive NSR8078AC is suitable for a wide range of stepping motors from NEMA 34 to NEMA 42, which is widely used in various kinds of machines, such as CNC routers, cutting machines, packing devices, pick-place devices, and so on. Particularly suitable for the applications require low noise, low heating and high speed performance.



## Electrical Specifications

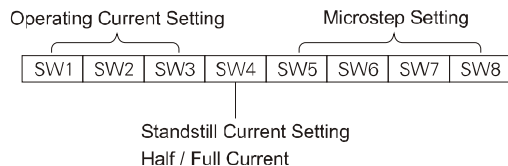
Parameters	Min	Typical	Max	Unit
Output current	2.8	-	7.8 (5.6 RMS)	A
Supply voltage	18	48	80	VAC
	+24	+72	+110	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	300	kHz
Isolation resistance	500			MΩ

## Function Description

Function	Description
Microstep Setting	14 selectable microstep resolutions up to 51,200 steps/rev. Set by SW5, 6, 7, 8 of the DIP switch.
Current Setting	The first three bits (SW1, 2, 3) of the DIP switch are used to set the operating current, which is up to 7.8 A.
Automatic Standstill Current Reduction	SW4 is used for the automatic standstill current reduction function. When this function is active, the current will be automatically reduced to 50% of the selected operating current 0.4 second after the last pulse. Theoretically, this will reduce motor heating to 25% (due to $P=I^2 \cdot R$ ) of the original value.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction control signal. ENA+ and ENA- are for the enable/disable control signal. Series connect resistors for current-limiting when +12V or +24V is used.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with theoretical output of 18 to 60VAC or +24 to +85VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

## Parameter Settings

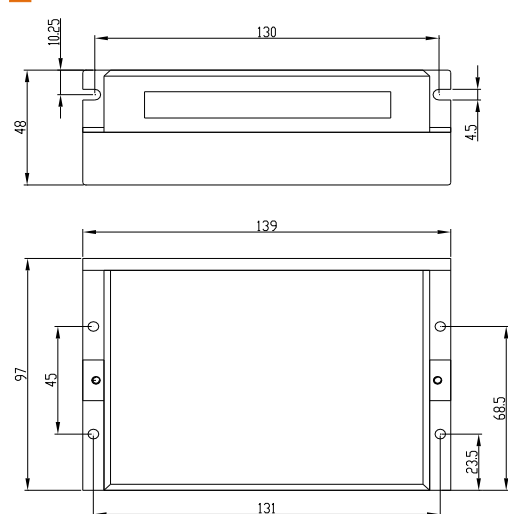
This drive NSR8078AC uses a 8-bit DIP switch to set microstep resolution and motor operating current, as shown below:



## Operating Current Settings

Peak Current	RMS Current	SW1	SW2	SW3
2.8A	2.0A	ON	ON	ON
3.5A	2.5A	OFF	ON	ON
4.2A	3.0A	ON	OFF	ON
4.9A	3.5A	OFF	OFF	ON
5.7A	4.0A	ON	ON	OFF
6.4A	4.6A	OFF	ON	OFF
7.0A	5.0A	ON	OFF	OFF
7.8A	5.6A	OFF	OFF	OFF

## Mechanical Dimension



## Microstep Resolution Settings

Microstep	Steps/Rev.	SW5	SW6	SW7	SW8
2	400	ON	ON	ON	ON
4	800	OFF	ON	ON	ON
8	1,600	ON	OFF	ON	ON
16	3,200	OFF	OFF	ON	ON
32	6,400	ON	ON	OFF	ON
64	12,800	OFF	ON	OFF	ON
128	25,600	ON	OFF	OFF	ON
256	51,200	OFF	OFF	OFF	ON
5	1,000	ON	ON	ON	OFF
10	2,000	OFF	ON	ON	OFF
25	5,000	ON	OFF	ON	OFF
50	10,000	OFF	OFF	ON	OFF
125	25,000	ON	ON	OFF	OFF
250	50,000	OFF	ON	OFF	OFF

### Introduction

The stepper drive NSK5045 is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. It brings a unique level of system smoothness, providing optimum torque, nulls mid-range instability and good high speed performance. Motor auto-identification and parameter auto-configuration technology offers optimum response with different motors. The driven motors can run with much lower noise, lower heating, smoother movement than most stepping drives on the market.

The stepper drive NSK5045 is suitable for a wide range of stepping motors, from NEMA 17 to NEMA 24. It can be used in various kinds of machines, such as medical machines, laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the NSK5045 an ideal solution for applications that require low-speed smoothness and good high speed performance.



### Electrical Specifications

Parameters	Min	Typical	Max	Unit
Output current	1.0	-	4.5 (3.2 RMS)	A
Supply voltage	+20	+36	+50	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			MΩ

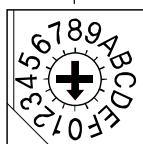
### Function Description

Function	Description
Microstep Setting	16 selectable microstep resolutions up to 25,600 steps/rev. Set by the first circular DIP switch.
Current Setting	The second circular DIP switch is used to set the operating current, which is up to 4.5 A.
Value-added Function	SW1, 2, 3, 4 of the DIP switch is used for the pulse mode, noise filter, self-test and automatic standstill current reduction function.
Control Signals	PUL+ and PUL- are for the pulse command signal. DIR+ and DIR- are for the direction machines control signal. RESET+ and RESET- are for the enable/disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +20 to 48VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

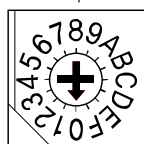
### Parameter Settings

This drive NSK5045 uses two circular DIP switches to set microstep resolution and motor operating current, as shown below:

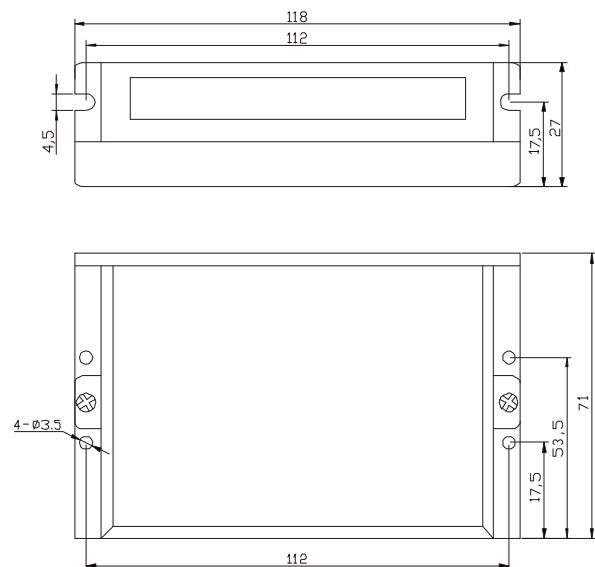
#### Microstep Setting



#### Operating Current Setting



### Mechanical Dimension



### Operating Current Settings

Peak Current	RMS Current	Position
1.0A	0.71A	0
1.5A	1.07A	1
2.0A	1.43A	2
2.5A	1.79A	3
3.0A	2.14A	4
3.5A	2.50A	5
4.0A	2.86A	6
4.5A	3.21A	7

### Microstep Resolution Settings

Microstep	Steps/Rev.	Position	Microstep	Steps/Rev.	Position
1	200	0	5	1,000	8
2	400	1	10	2,000	9
4	800	2	20	4,000	A
8	1,600	3	25	5,000	B
16	3,200	4	40	8,000	C
32	6,400	5	50	10,000	D
64	12,800	6	100	20,000	E
128	25,600	7	125	25,000	F

### Introduction

The stepper drive NSV3015 is a micro size 0-5V input stepper drive, and its built-in potentiometers are used to set operating current, acceleration and deceleration time. With the drive, the motor speed is controllable and follows the external potentiometer or analog input. There are low speed mode and high speed mode for different applications. It is simple, stable and low cost.

The stepper drive NSV3015 is suitable for the application which needs to adjust the velocity via the potentiometer or analog 0-5V command. It can work with the NEMA8-17 stepper motor to replace the brushless motor with gearbox due to its high torque and less motor noise at low speed. It can be used in various kinds of machines, such as 3D printers, inkjet printers, conveyor belts, plotters, and so on.



### Electrical Specifications

Parameters	Min	Typical	Max	Unit
Output current	0.2	-	1.5 (1.06RMS)	A
Supply voltage	+10	+24	+30	VDC
Accel.&Decel. time	0	-	4.0	S
Low speed range	0.03	-	14.6	RPM
High speed range	4.6	-	1,875	RPM
Logic signal current	7	10	16	mA
Isolation resistance	500			MΩ

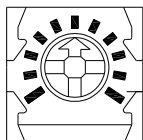
### Function Description

Function	Description
Microstep Setting	The microstep resolution is fixed to be 3,200 steps/rev.
Current Setting	The first potentiometer pointer is used to set the operating current, which is up to 1.5 A.
Accel.&Decel. Time	The second potentiometer pointer is used to set the Accel.&Decel. time, which is up to 4.0S.
Automatic Standstill Current Reduction	The current will be automatically reduced to 50% of the selected operating current 0.4 second after the last pulse.
Control Signals	OPTO is for the opto-coupler power supply, and its typical voltage is +5V. DIR is for direction control signal. EN is for the enable/ disable control signal.
Motor Connector	A+, A- and B+, B- are for motor connections. Exchanging the connection of two wires for a coil to the drive will reverse default motion direction.
Power Connector	Recommended to use power supplies with output of +12 to 24VDC, leaving space for power fluctuation and back-EMF.
Indicators	There are two LED indicators on the drive for power and alarm signals. When the Green LED is on, the drive is powered up. When the Red LED is on, the drive is in fault status. When in fault status, the motor shaft will be free. Reset the drive by re-powering it to make it function properly after solving problem(s).

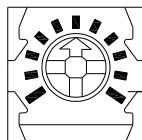
### Parameter Settings

This drive NSV3015 uses two circular potentiometer pointers to set motor operating current and acceleration/deceleration time, as shown below:

Operating Current Setting



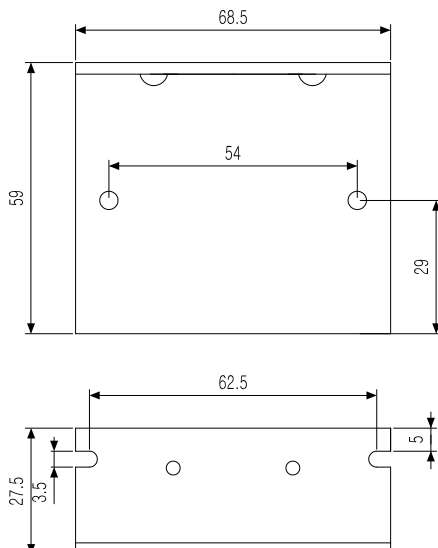
Accel.&Decel. Time



### Operating Current Settings

Peak Current	RMS Current	Position
0.20A	0.14A	1
0.40A	0.28A	2
0.60A	0.42A	3
0.75A	0.53A	4
0.87A	0.62A	5
1.07A	0.76A	6
1.12A	0.79A	7
1.29A	0.91A	8
1.50A	1.06A	9

### Mechanical Dimension



### Microstep Resolution Settings

Accel.&Decel. Time	Position
0.0S	0
0.4S	1
0.8S	2
1.2S	3
1.6S	4
2.0S	5
2.4S	6
2.8S	7
3.2S	8
3.6S	9
4.0S	10