Stepper Motor / Servo Motor / Driver

GMT GLOBAL INC.

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AC Design 04-27071159

GMT GMT GLOBAL INC.

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Notice:

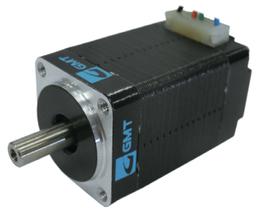
※ Failure that occurs when the product is not used in specified environment and method will be out of the guaranteed range.
※ To improve products and services, we reserve the right to change product engineering.
The catalog is subject to addition, revision and deletion without notice.
Please visit GMT website: www.gmtlinear.com, or contact the regional sales for the latest information.

□2MS-N20

Lead Wiring – Bipolar

20 mm (0.79 inch sq)

Step Angle : 1.8˚



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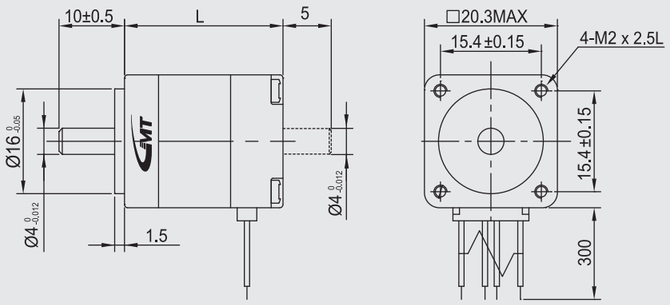
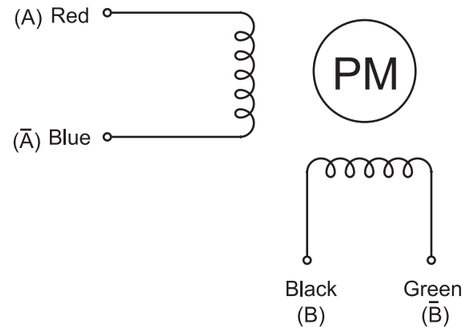


Model no.		Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
2MS-N20U28A	2MS-N20D28A	0.2	24	8	0.016(2.2)	1.9	0.05	28
＊2MS-N20U33A	＊2MS-N20D33A	0.6	6.5	2.2	0.02(2.8)	2.3	0.07	33
2MS-N20U38A	2MS-N20D38A	0.6	10	5.5	0.04(5.5)	2.6	0.08	38

＊Inventoried items

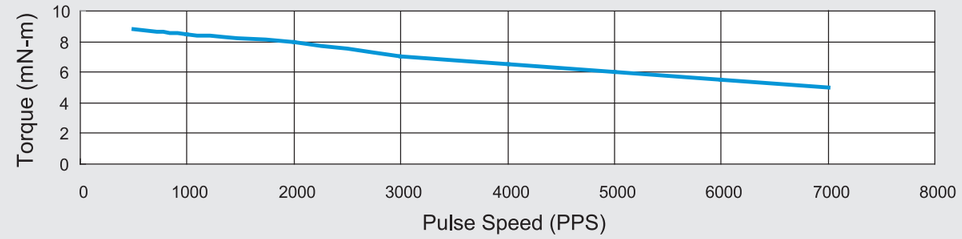
- Step angle Accuracy : ±5%
- Resistance Accuracy : ±10%
- Inductance Accuracy : ±20%
- Allowable Heating : 80°C Max. (rated current, 2-phase on)
- Environment Temperature : -10°C / +50°C
- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Shaft Radial Play : 0.06Max. (450 g-load)
- Shaft Axial Play : 0.08Max. (450 g-load)

Wiring Diagram

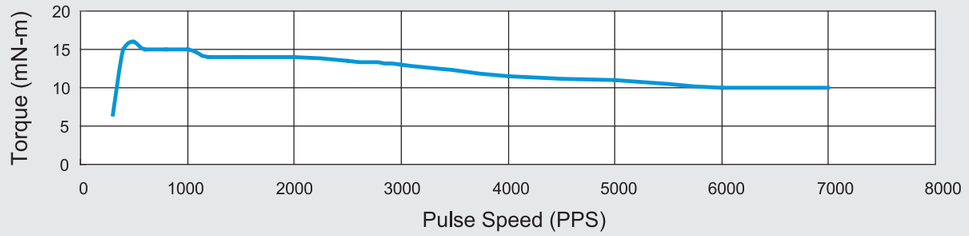


Speed – Torque Characteristics

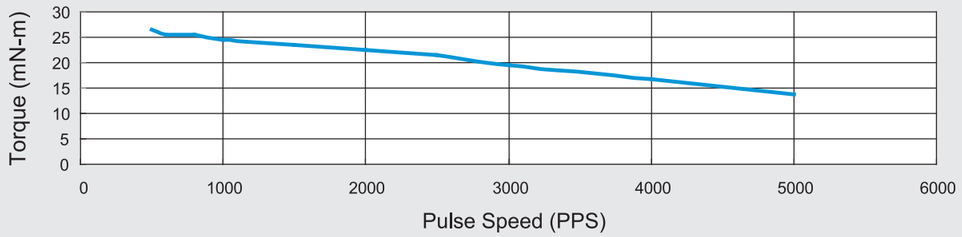
2MS-N20U28A, N20D28A



2MS-N20U33A, N20D33A



2MS-N20U38A, N20D38A

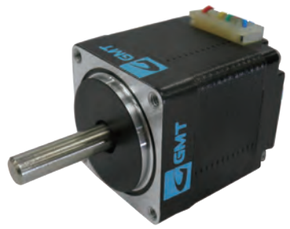


□ 2MS-N28

Lead Wiring – Bipolar

28 mm (1.10 inch sq)

Step Angle : 1.8˚



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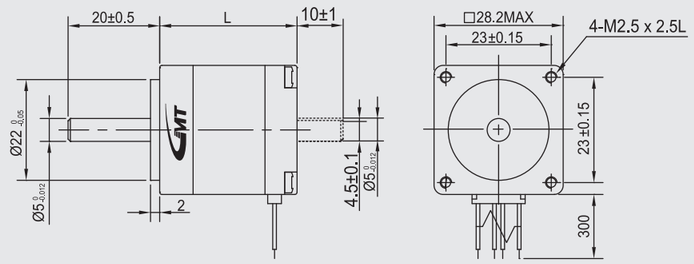
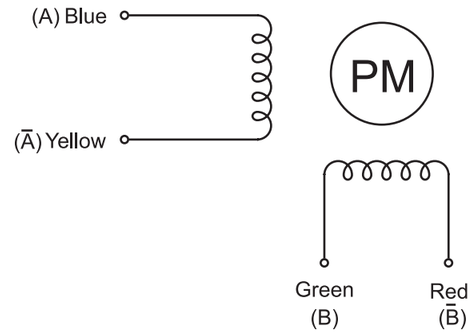


Model no.		Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
＊2MS-N28U32A	＊2MS-N28D32A	0.67	5.6	4.2	0.06(8.3)	9	0.11	31.3
＊2MS-N28U45A	＊2MS-N28D45A	0.67	6.8	4.9	0.09(13.2)	12	0.14	44.5
2MS-N28U51A	2MS-N28D51A	0.67	9.2	5.7	0.12(16.7)	18	0.2	50.5

＊Inventoried items

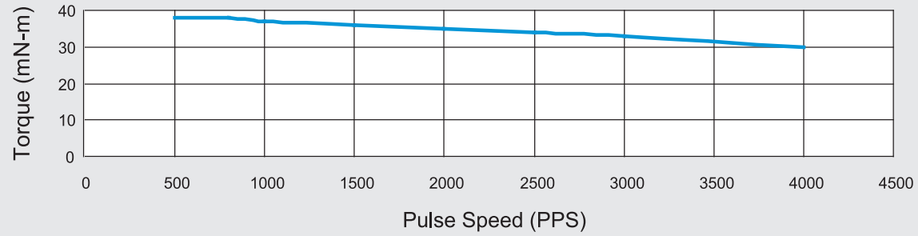
- Step angle Accuracy : ±5%
- Resistance Accuracy : ±10%
- Inductance Accuracy : ±20%
- Allowable Heating : 80°C Max. (rated current, 2-phase on)
- Environment Temperature : -10°C / +50°C
- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Shaft Radial Play : 0.06Max. (450 g-load)
- Shaft Axial Play : 0.08Max. (450 g-load)

Wiring Diagram

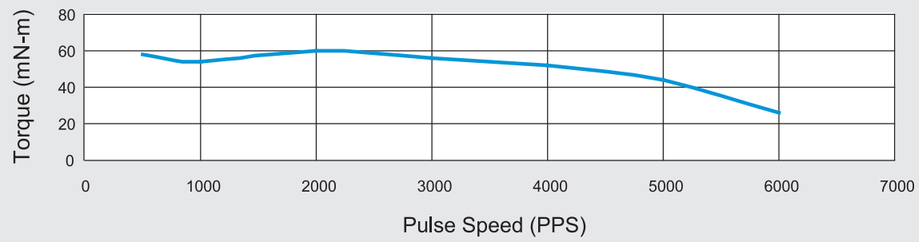


Speed – Torque Characteristics

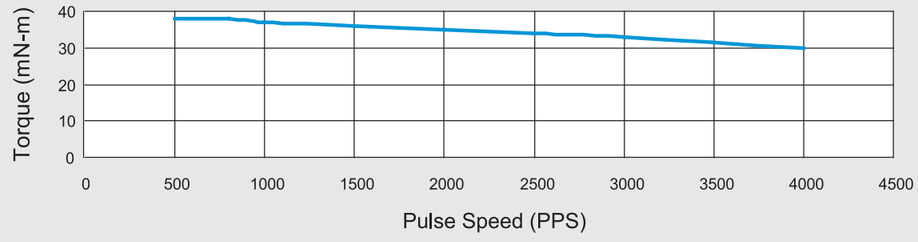
2MS-N28U32A, N28D32A



2MS-N28U45A, N28D45A



2MS-N28U51A, N28D51A

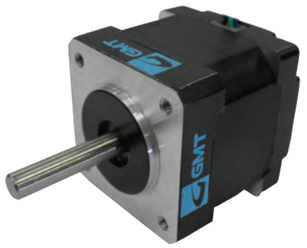


□ 2MS-N35

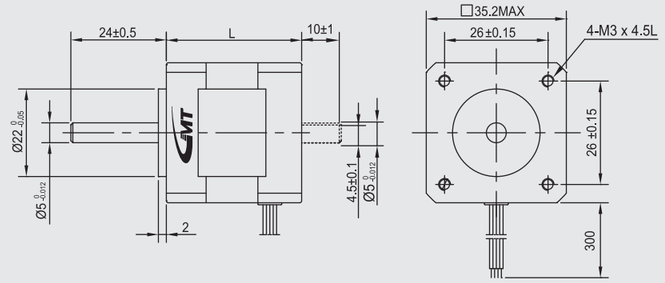
Lead Wiring – Bipolar

35 mm (1.38 inch sq)

Step Angle : 1.8˚



Dimensions



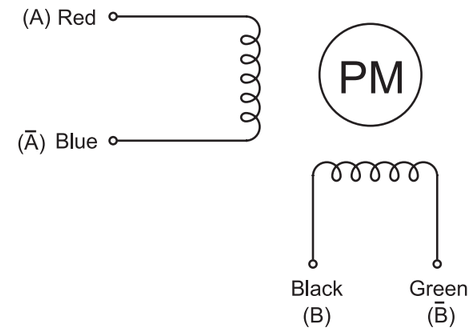
Model no.		Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
2MS-N35U20A	2MS-N35D20A	0.4	25	9	0.05(7)	8	0.1	20
2MS-N35U26A	2MS-N35D26A	0.8	4.8	4	0.08(11)	10	0.12	26
2MS-N35U28A	2MS-N35D28A	0.5	20	10	0.1(14)	10	0.14	28
＊2MS-N35U36A	＊2MS-N35D36A	1	2.7	2.6	0.13(19)	14	0.18	36

＊Inventoried items

- Step angle Accuracy : ±5%
- Resistance Accuracy : ±10%
- Inductance Accuracy : ±20%
- Allowable Heating : 80°C Max. (rated current, 2-phase on)
- Environment Temperature : -10°C / +50°C
- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Shaft Radial Play : 0.06Max. (450 g-load)
- Shaft Axial Play : 0.08Max. (450 g-load)

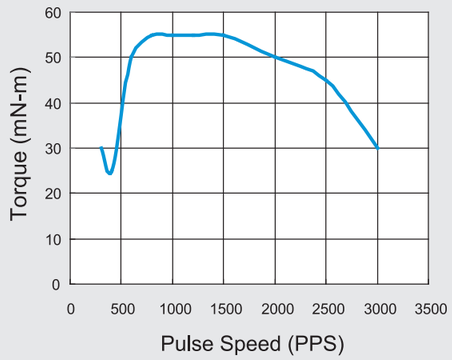
2-Phase Stepper Motor MS Series ▶ Frame Size: □35
□2MS-N35

Wiring Diagram

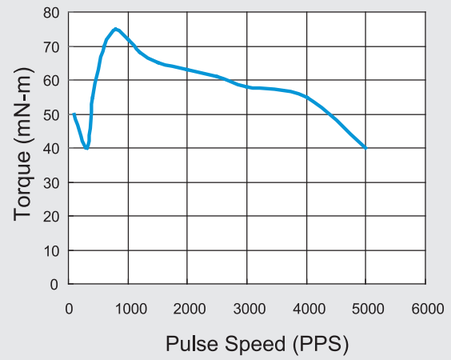


Speed – Torque Characteristics

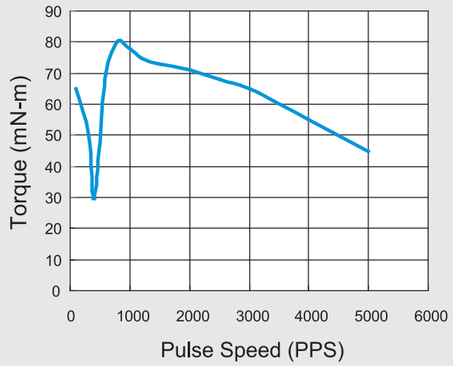
2MS-N35U20A, N35D20A



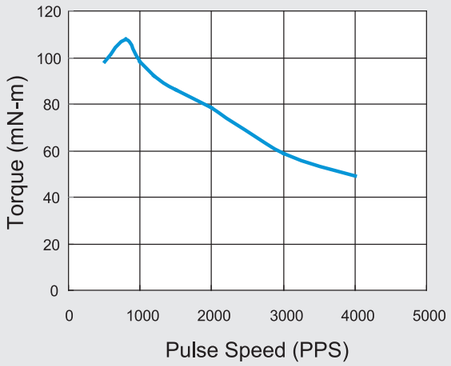
2MS-N35U26A, N35D26A



2MS-N35U28A, N35D28A



2MS-N35U36A, N35D36A

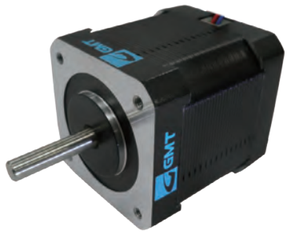


□ 2MS-N42

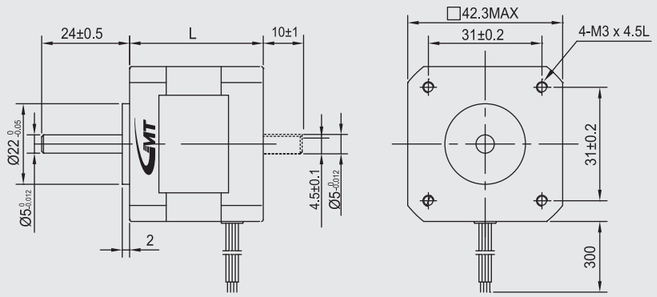
Lead Wiring – Bipolar

42 mm (1.65 inch sq)

Step Angle : 1.8˚



Dimensions

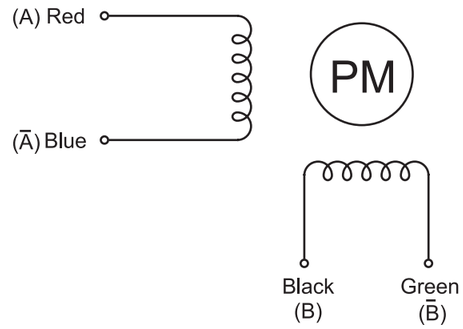


Model no.		Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
2MS-N42U33A	2MS-N42D33A	1.33	2.1	2.5	0.21(30)	35	0.22	33
2MS-N42U39A	2MS-N42D39A	1.68	1.65	3.2	0.35(50)	54	0.28	39
＊2MS-N42U47A	＊2MS-N42D47A	1.68	1.65	3.8	0.43(62)	68	0.35	47

＊Inventoried items

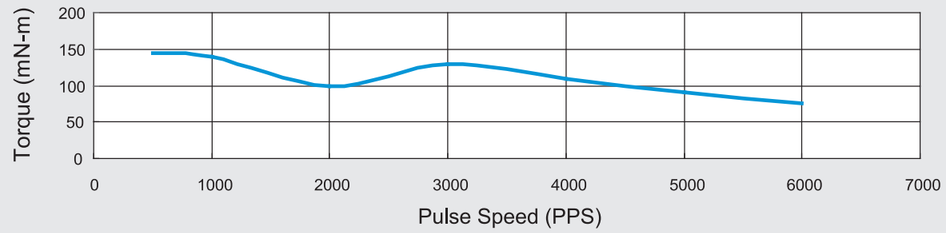
- Step angle Accuracy : ±5%
- Resistance Accuracy : ±10%
- Inductance Accuracy : ±20%
- Allowable Heating : 80°C Max. (rated current, 2-phase on)
- Environment Temperature : -10°C / +50°C
- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Shaft Radial Play : 0.06Max. (450 g-load)
- Shaft Axial Play : 0.08Max. (450 g-load)

Wiring Diagram

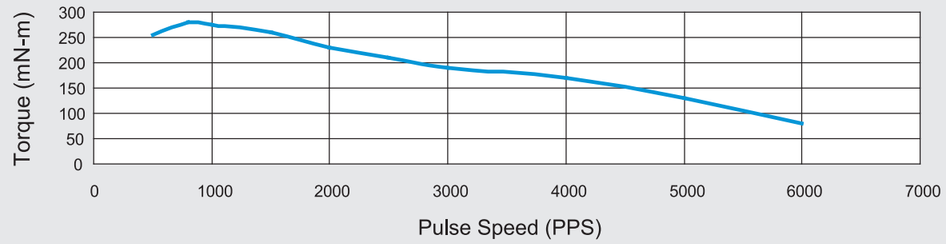


Speed – Torque Characteristics

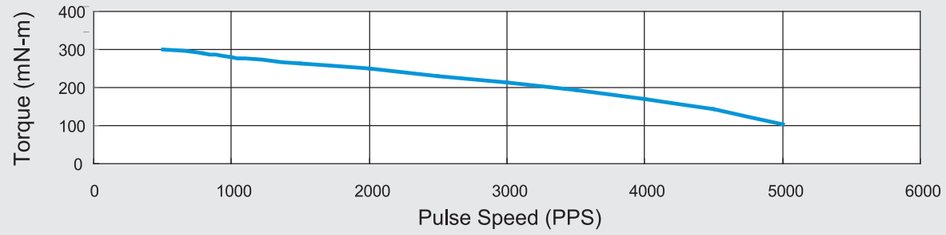
2MS-N42U33A, N42D33A



2MS-N42U39A, N42D39A



2MS-N42U47A, N42D47A



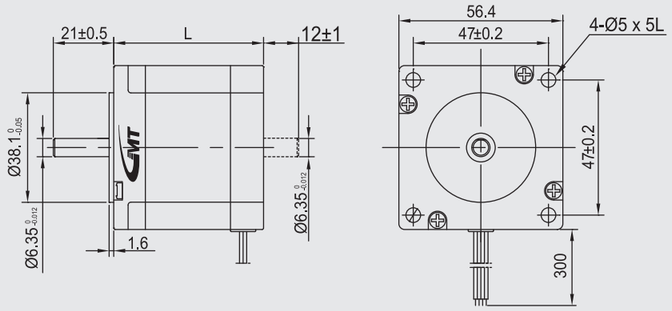
□ 2MS-N57

Lead Wiring – Bipolar

57 mm (2.24 inch sq)

Step Angle :1.8˚

Dimensions

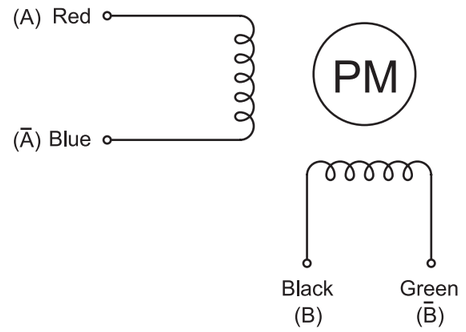


Model no.		Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
＊2MS-N57U41A	＊2MS-N57D41A	2.8	0.7	1.4	0.54(76)	120	0.47	41
2MS-N57U51A	2MS-N57D51A	2.8	0.83	2.2	1(140)	275	0.65	51
2MS-N57U56A	2MS-N57D56A	2.8	0.9	2.5	1.24(175)	300	0.7	56
2MS-N57U76A	2MS-N57D76A	2.8	1.13	3.6	1.86(263)	480	1	76

＊Inventoried items

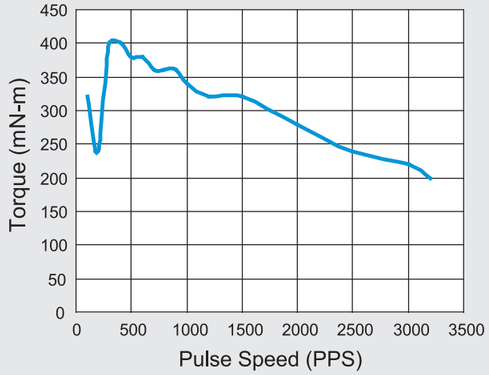
- Step angle Accuracy : ±5%
- Resistance Accuracy : ±10%
- Inductance Accuracy : ±20%
- Allowable Heating : 80°C Max. (rated current, 2-phase on)
- Environment Temperature : -10°C / +50°C
- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Shaft Radial Play : 0.06Max. (450 g-load)
- Shaft Axial Play : 0.08Max. (450 g-load)

Wiring Diagram

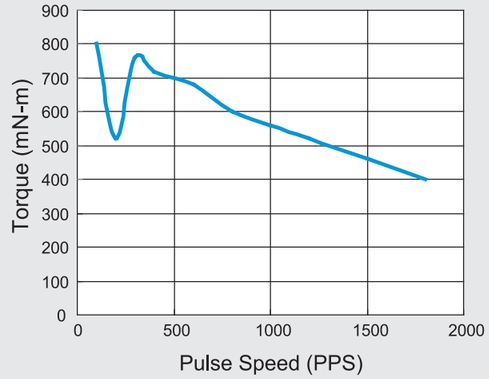


Speed – Torque Characteristics

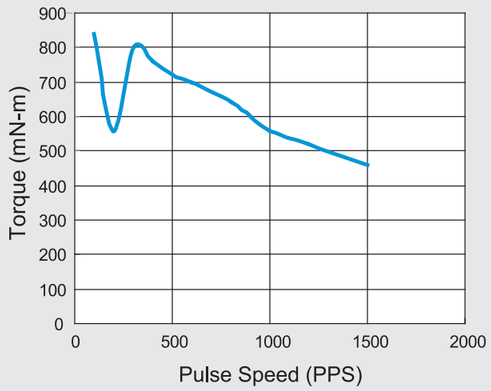
2MS-N57U41A, N57D41A



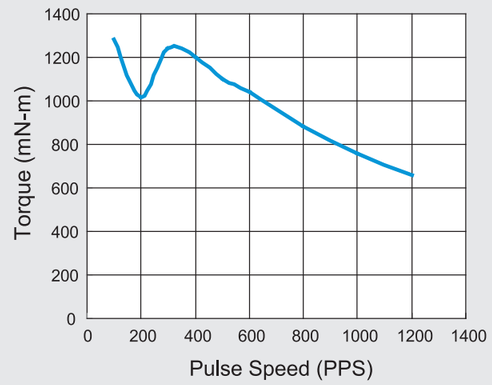
2MS-N57U51A, N57D51A



2MS-N57U56A, N57D56A



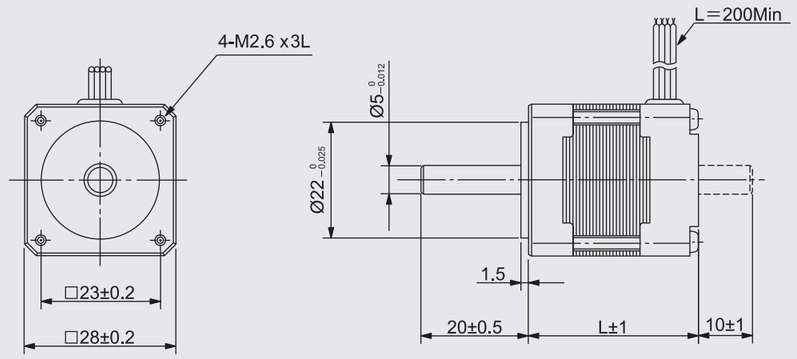
2MS-N57U76A, N57D76A



□ 28MM

Lead Wiring – Unipolar
(1.1 inch sq)
RoHS Compliance /
Step Angle : 1.8˚

Dimensions



Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
TS3641N1E1	TS3641N11E1	1.8	1.5	0.7	0.3	0.05(7.08)	8	0.15	33.5
＊TS3641N1E2	＊TS3641N11E2	1.8	0.95	2.7	1.2	0.06(8.5)	8	0.15	33.5
TS3641N2E3	TS3641N12E3	1.8	1.4	1	0.55	0.09(12.75)	18	0.25	47.5

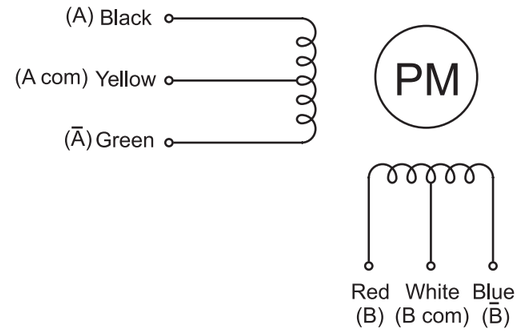
＊Inventoried items

- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Allowable Heating : 80°C Max.
  (Resistance method)
- Environment Temperature : -20°C / +50°C
- Shaft Radial Play : 0.075mm Max at the load 9.8N (1kgf)
- Shaft Axial Play : 0.075mm Max at the load 9.8N (1.1kgf)

※Please keep motor surface temperature under 90°C.

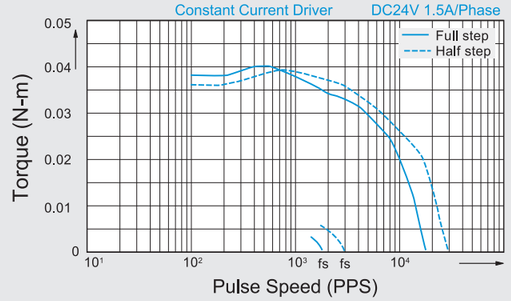
GMT GLOBAL INC.
TAMAGAWA 2-Phase Stepper Motor ▶ Frame Size: □28
□28MM
2-Phase Stepper Motor
TAMAGAWA
Frame Size : □28

Wiring Diagram

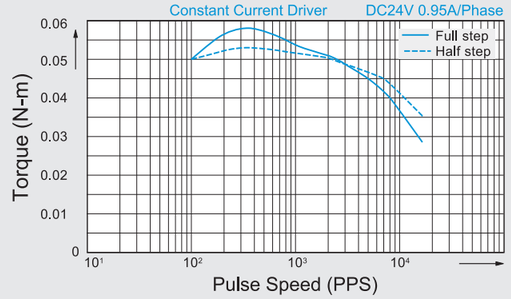


Speed – Torque Characteristics

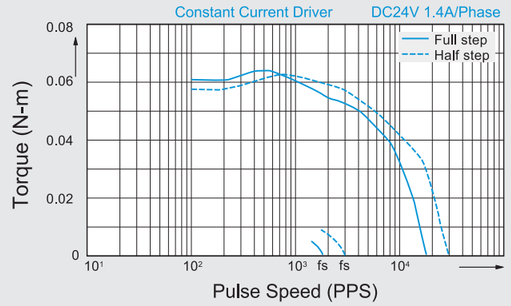
TS3641N1E1, N11E1



TS3641N1E2, N11E2

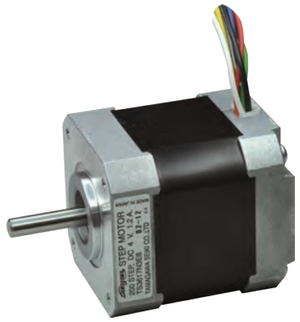


TS3641N2E3, N12E3

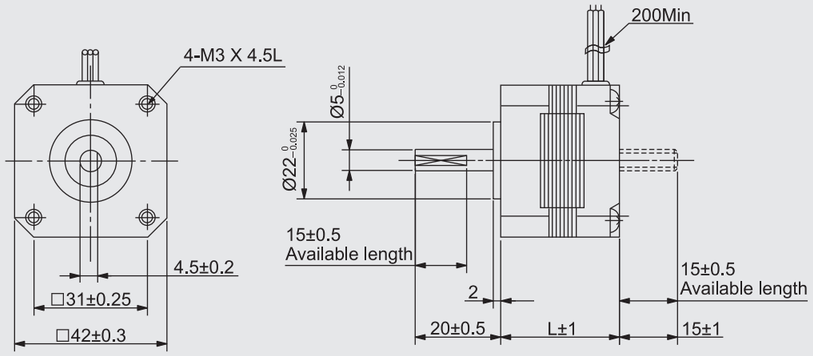


□ 42MM

Lead Wiring – Unipolar
(1.6 inch sq)
RoHS Compliance /
Step Angle : 1.8



Dimensions



Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
TS3617N1E1	TS3617N11E1	1.8	0.95	4.2	2.8	0.16(22.66)	35	0.2	33
＊TS3617N1E3	TS3617N11E3	1.8	0.3	40	22	0.16(22.66)	35	0.2	33
TS3617N2E4	TS3617N12E4	1.8	1.2	3.3	3.6	0.26(36.82)	54	0.24	39
TS3617N3E8	＊TS3617N13E8	1.8	1.2	3.3	3	0.32(45.32)	68	0.31	47
＊TS3617N3E10	TS3617N13E10	1.8	0.4	30	29	0.32(45.32)	68	0.31	47

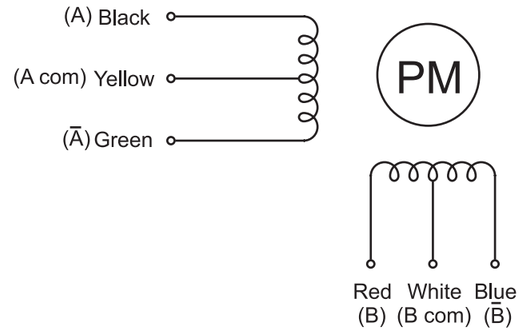
＊Inventoried items

- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Allowable Heating : 80°C Max. (Resistance method)
- Environment Temperature : -20°C / +50°C
- Shaft Radial Play : 0.075mm Max at the load 9.8N (1kgf)
- Shaft Axial Play : 0.075mm Max at the load 9.8N (1.1kgf)

※Please keep motor surface temperature under 90°C.

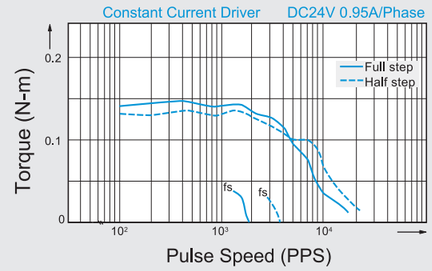
TAMAGAWA 2-Phase Stepper Motor ▶ Frame Size: □42
□42MM
GMT GLOBAL INC.
2-Phase Stepper Motor
TAMAGAWA
Frame Size : □42

Wiring Diagram

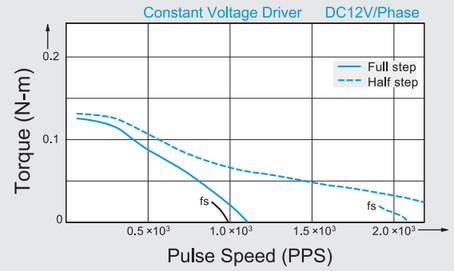


Speed – Torque Characteristics

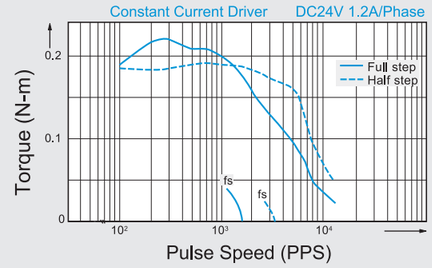
TS3617N1E1, N11E1



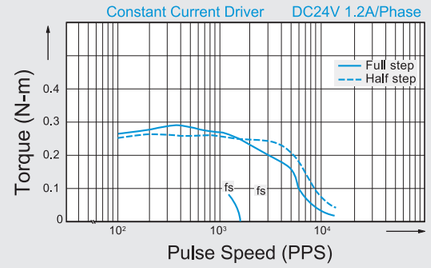
TS3617N1E3, N11E3



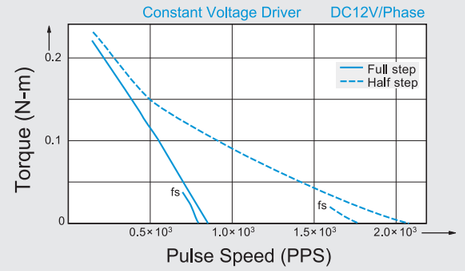
TS3617N2E4, N12E4



TS3617N3E8, N13E8



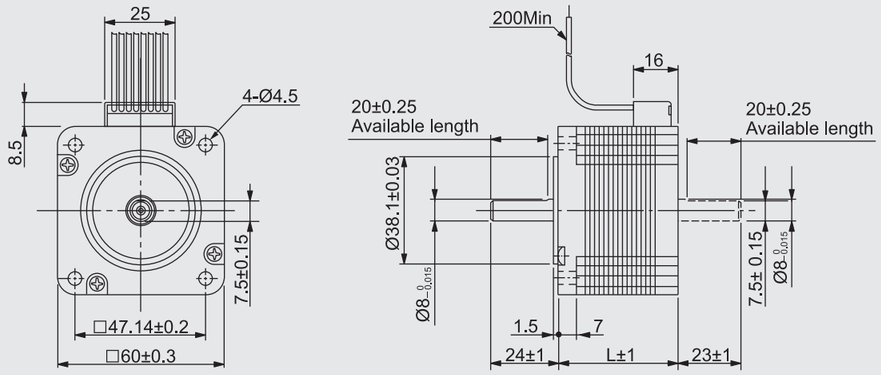
TS3617N3E10, N13E10



□ 60MM

Lead Wiring – Unipolar
(2.36 inch sq)
RoHS Compliance /
Step Angle : 1.8˚

Dimensions



Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
TS3606N3E8	TS3606N13E8	1.8	2	4.6	2	1.7(204.75)	570	1.1	65
＊TS3606N4E10	TS3606N14E10	1.8	1	12.5	30	2.2(311.56)	900	1.45	85
TS3606N4E11	TS3606N14E11	1.8	2	3	3.2	2.2(311.56)	900	1.45	85

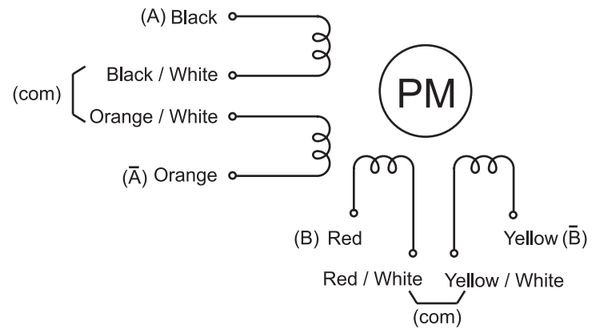
＊Inventoried items

- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Allowable Heating : 80°C Max. (Resistance method)
- Environment Temperature : -20°C / +50°C
- Shaft Radial Play : 0.075mm Max at the load 9.8N (1kgf)
- Shaft Axial Play : 0.075mm Max at the load 9.8N (1.1kgf)

※Please keep motor surface temperature under 90°C.

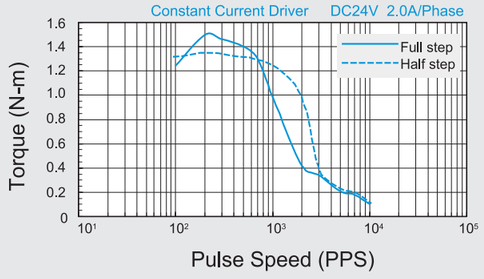
TAMAGAWA 2-Phase Stepper Motor ▶ Frame Size: □60
□60MM

Wiring Diagram

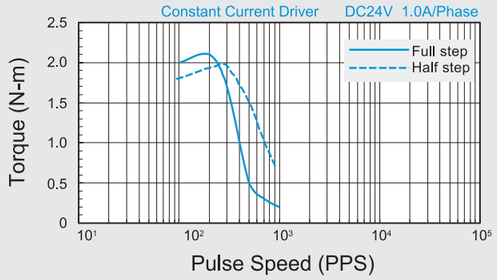


Speed – Torque Characteristics

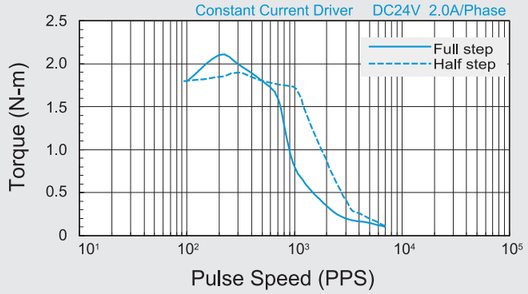
TS3606N3E8, N13E8



TS3606N4E10, N14E10



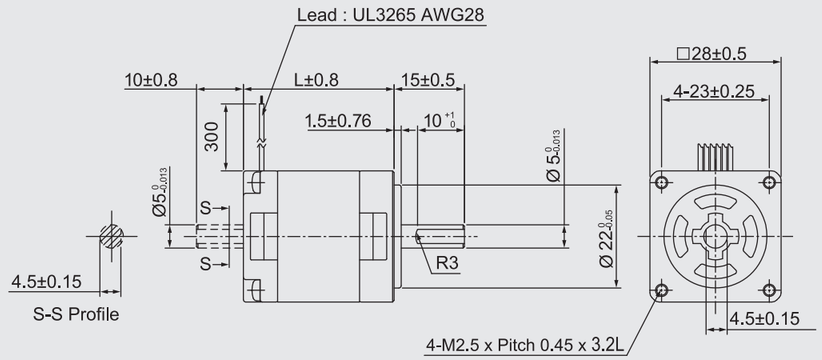
TS3606N4E11, N14E11



□ 28MM

Lead Wiring – Unipolar
(1.1 inch sq)
RoHS Compliance /
Step Angle : 1.8˚

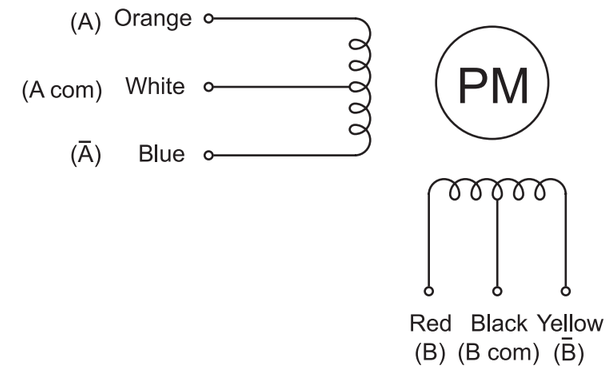
Dimensions



Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
* SH2281-5271	* SH2281-5231	1.8	1	2.85	1	0.055(7.79)	10	0.11	32
* SH2285-5271	* SH2285-5231	1.8	1	4.1	1.9	0.115(16.28)	22	0.2	51.5

*Inventoried items

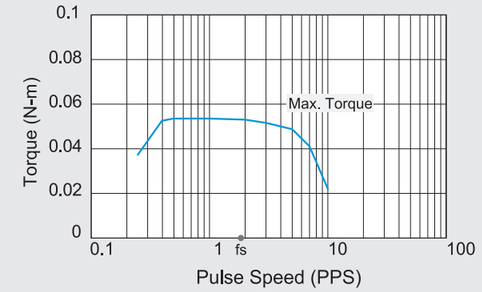
Wiring Diagram



Speed – Torque Characteristics

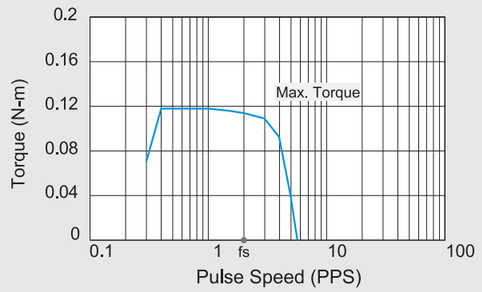
SH2281-5271, 5231

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1A / phase,
2-Phase Drive (Full Step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]



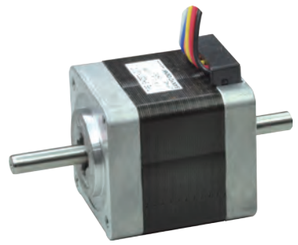
SH2285-5271, 5231

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1A / phase,
2-Phase Drive (Full Step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]

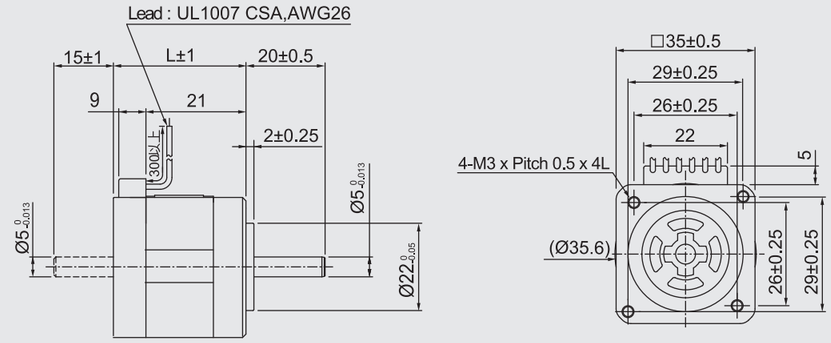


□ 35MM

Lead Wiring – Unipolar
(1.38 inch sq)
RoHS Compliance /
Step Angle : 1.8˚



Dimensions

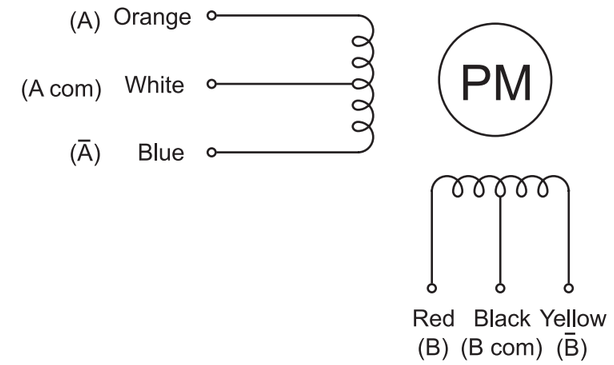


Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
SH3537-12U40	＊SH3537-12U10	1.8	1.2	2.7	2	0.15(21.24)	25	0.2	37
SH3552-12U40	SH3552-12U10	1.8	1.2	3.4	2.8	0.23(32.57)	43	0.3	52

＊Inventoried items

SANYO 2-Phase Stepper Motor ▶ Frame Size: □35
□35MM

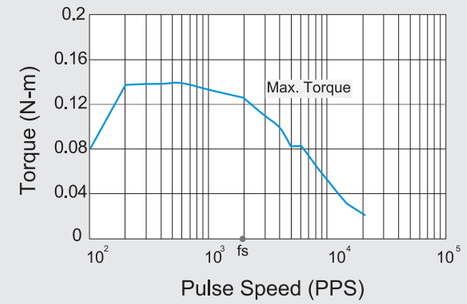
Wiring Diagram



Speed – Torque Characteristics

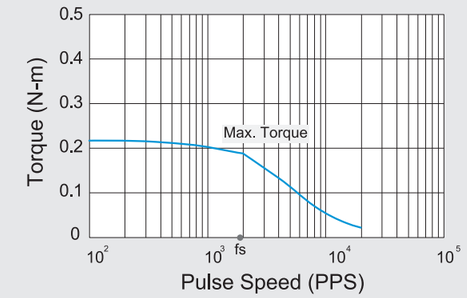
SH3537-12U40, 12U10

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1.2A / phase,
2-Phase Drive (Full Step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]
pulley balancermethod



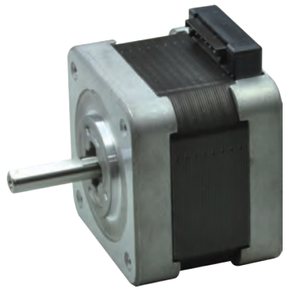
SH3552-12U40, 12U10

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1.2A / phase,
2-Phase Drive (Full Step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]
pulley balancermethod

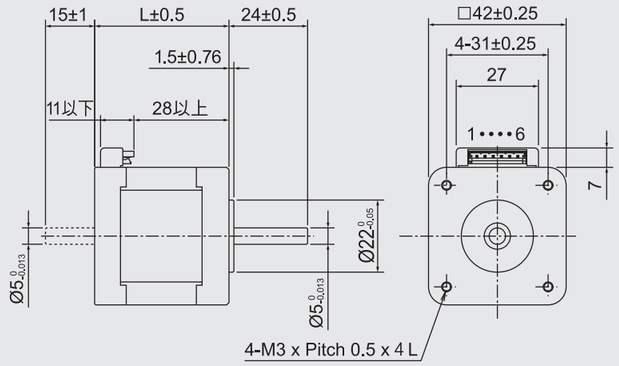


□ 42MM

Lead Wiring – Unipolar
(1.65 inch sq)
RoHS Compliance /
Step Angle : 1.8˚



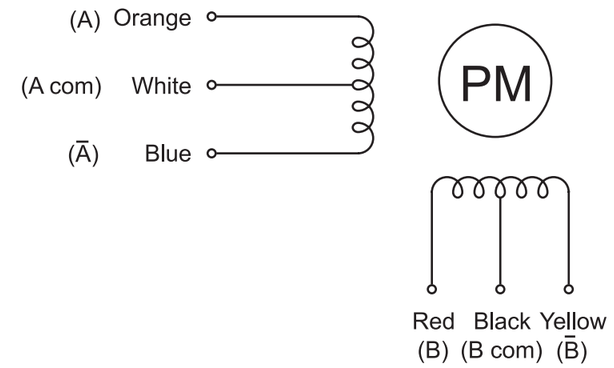
Dimensions



Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
103H5205-0469	＊103H5205-0411	1.8	1.2	2.4	2.3	0.2(28.32)	36	0.23	33
＊103H5210-0440	＊103H5210-0410	1.8	1.2	3.3	3.4	0.37(52.39)	74	0.37	48

＊Inventoried items

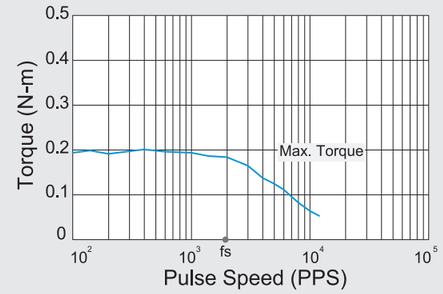
Wiring Diagram



Speed – Torque Characteristics

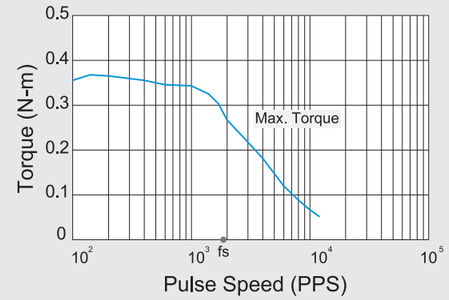
103H5205-0469, 0411

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1.2A / phase,
2-Phase Drive (Full Step)
JL1 : [0.94×10⁻⁴kg · M²(5.14 oz · in²)]
JL2 : [0.8×10⁻⁴kg · M²(4.37 oz · in²)]



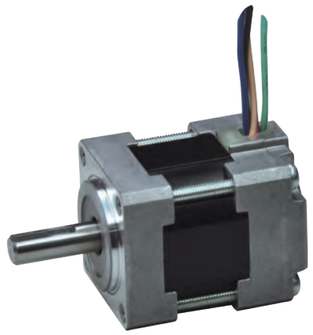
103H5210-0440, 0410

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1.2A / phase,
2-Phase Drive (Full Step)
JL1 : [0.94×10⁻⁴kg · M²(5.14 oz · in²)]
JL2 : [0.8×10⁻⁴kg · M²(4.37 oz · in²)]

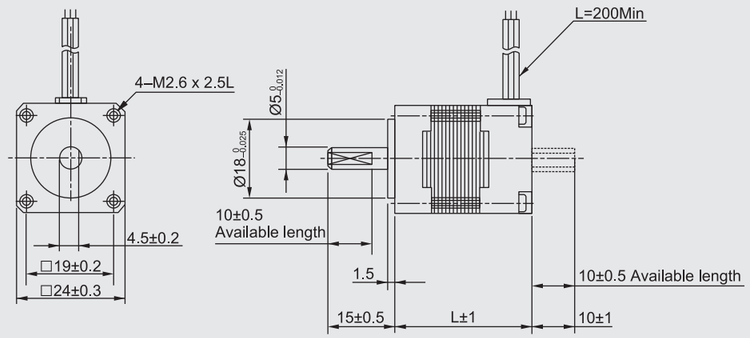


□ 24MM

Lead Wiring – Unipolar
(0.94 inch sq)
RoHS Compliance /
Step Angle : 0.72˚



Dimensions



Model no.		Step angle	Current	Resistance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	N-m(oz-in)	g-cm²	(kg)	(mm)
＊TS3664N1E2	TS3664N11E2	0.72	0.75	1.1	0.018(2.549)	4.2	0.07	30.5
TS3664N2E4	TS3664N12E4	0.72	0.75	1.7	0.028(3.965)	8.3	0.12	46.5

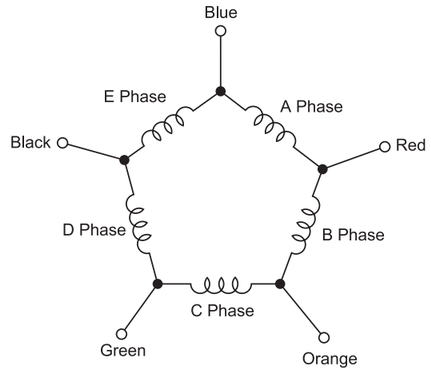
＊Inventoried items

- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Allowable Heating : 80°C Max. (Resistance method)
- Environment Temperature : -20°C / +50°C
- Shaft Radial Play : 0.075mm Max at the load 9.8N (1kgf)
- Shaft Axial Play : 0.075mm Max at the load 9.8N (1.1kgf)

※Please keep motor surface temperature under 90°C.

GMT GLOBAL INC.
TAMAGAWA 5-Phase Stepper Motor ▶ Frame Size: □24
□24MM
5-Phase Stepper Motor
TAMAGAWA
Frame Size : □24

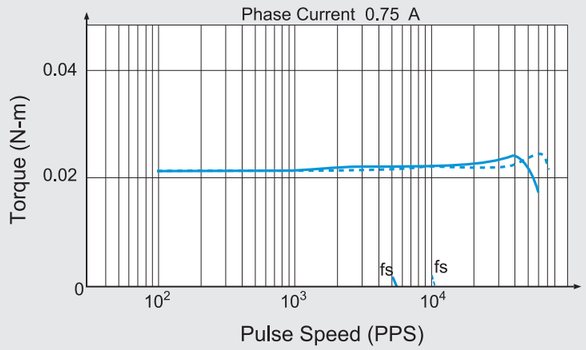
Wiring Diagram



Speed – Torque Characteristics

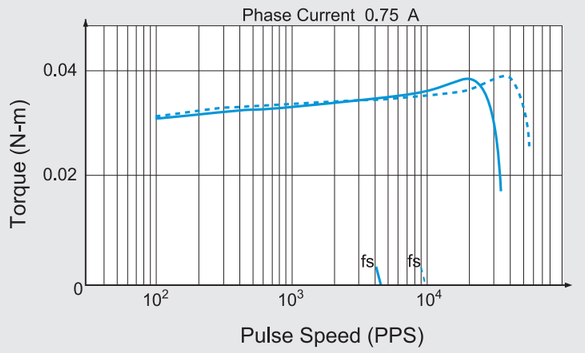
TS3664N1E2, N11E2

fs : Max. Activated Torque
Work Voltage : DC24V
—— Full Step : 0.72°/ STEP
- - - - Half Step : 0.36°/ STEP
Moment of Inertia of Pulley : 5g·cm²



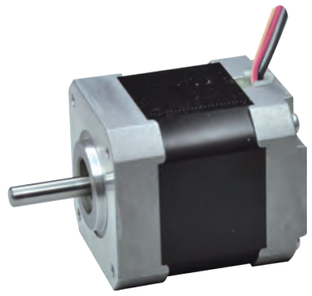
TS3664N2E4, N12E4

fs : Max. Activated Torque
Work Voltage : DC24V
—— Full Step : 0.72°/ STEP
- - - - Half Step : 0.36°/ STEP
Moment of Inertia of Pulley : 5g·cm²

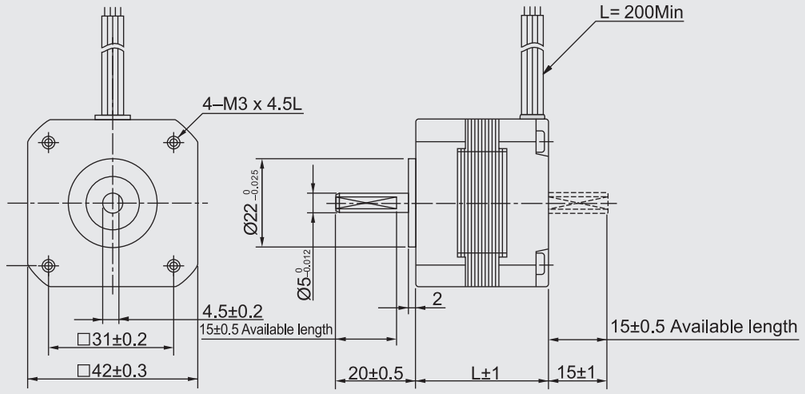


□ 42MM

Lead Wiring – Unipolar
(1.65 inch sq)
RoHS Compliance /
Step Angle : 0.72˚



Dimensions



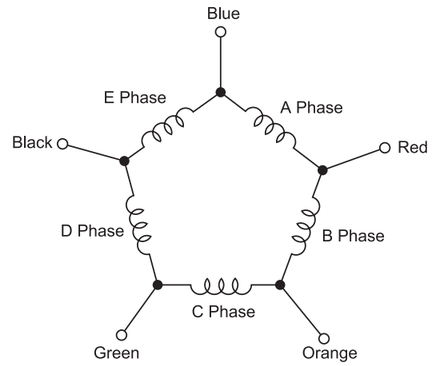
Model no.		Step angle	Current	Resistance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	N-m(oz-in)	g-cm²	(kg)	(mm)
＊TS3667N1E3	＊TS3667N11E3	0.72	1.4	0.48	0.13(18.41)	35	0.2	33
TS3667N2E5	TS3667N12E5	0.72	0.75	1.65	0.18(25.49)	54	0.24	39
＊TS3667N3E7	＊TS3667N13E7	0.72	0.75	2.2	0.24(33.99)	68	0.31	47

＊Inventoried items

- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Allowable Heating : 80°C Max. (Resistance method)
- Environment Temperature : -20°C / +50°C
- Shaft Radial Play : 0.075mm Max at the load 9.8N (1kgf)
- Shaft Axial Play : 0.075mm Max at the load 9.8N (1.1kgf)

※Please keep motor surface temperature under 90°C.

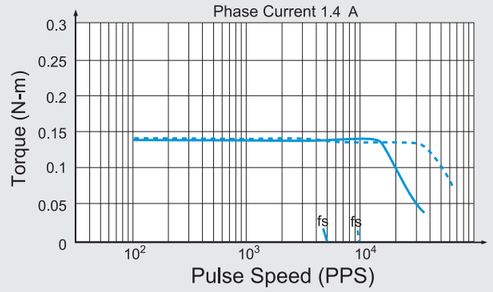
Wiring Diagram



Speed – Torque Characteristics

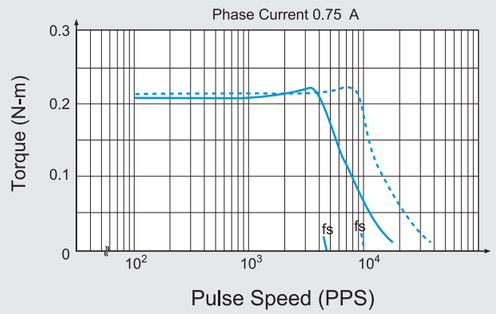
TS3667N1E2, N11E2

fs : Max. Activated Torque
Work Voltage : DC24V
—— Full Step : 0.72°/ STEP
- - - - Half Step : 0.36°/ STEP
Moment of Inertia of Pulley : 5g·cm²



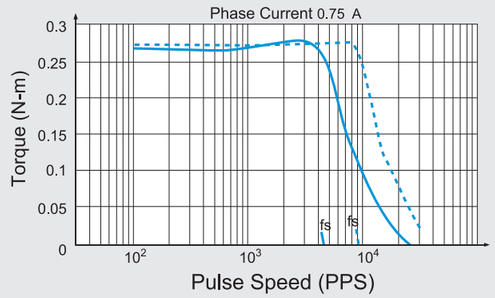
TS3667N2E5, N12E5

fs : Max. Activated Torque
Work Voltage : DC24V
—— Full Step : 0.72°/ STEP
- - - - Half Step : 0.36°/ STEP
Moment of Inertia of Pulley : 5g·cm²



TS3667N3E7, N13E7

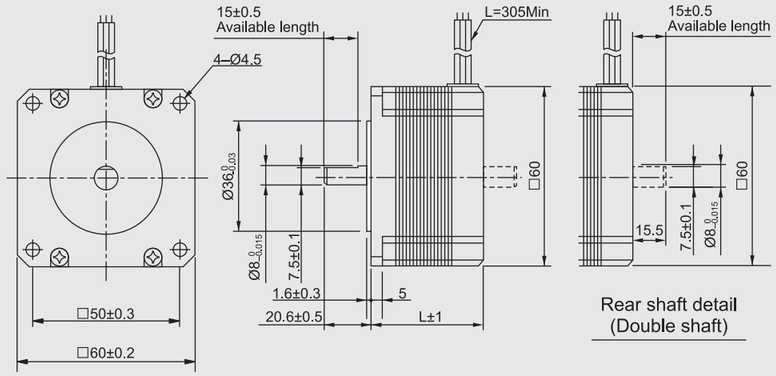
fs : Max. Activated Torque
Work Voltage : DC24V
—— Full Step : 0.72°/ STEP
- - - - Half Step: 0.36°/ STEP
Moment of Inertia of Pulley : 5g·cm²



□ 60MM

Lead Wiring – Unipolar
(2.36 inch sq)
RoHS Compliance /
Step Angle : 0.72˚

Dimensions



Model no.		Step angle	Current	Resistance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	N-m(oz-in)	g-cm²	(kg)	(mm)
TS3624N2E3	TS3624N22E3	0.72	0.75	3.4	0.6(84.97)	220	0.7	56.5
＊TS3624N2E5	TS3624N23E5	0.72	1.4	1.8	1.3(184.1)	440	1.2	86.5

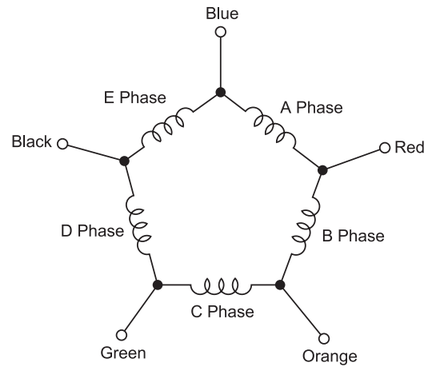
＊Inventoried items

- Insulation Resistance : 100MΩ Min (at DC500V)
- Insulation Allowable Voltage : AC 500V (1min)
- Allowable Heating : 80°C Max. (Resistance method)
- Environment Temperature : -20°C / +50°C
- Shaft Radial Play : 0.075mm Max at the load 9.8N (1kgf)
- Shaft Axial Play : 0.075mm Max at the load 9.8N (1.1kgf)

※Please keep motor surface temperature under 90°C.

TAMAGAWA 5-Phase Stepper Motor ▶ Frame Size: □60
□60MM

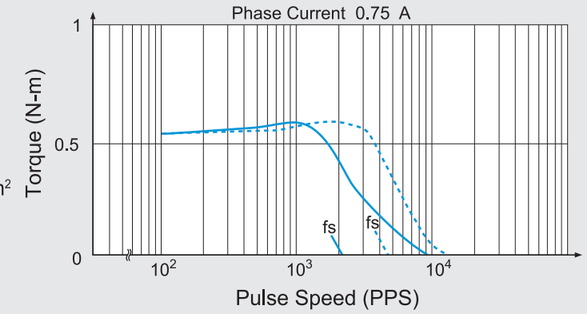
Wiring Diagram



Speed – Torque Characteristics

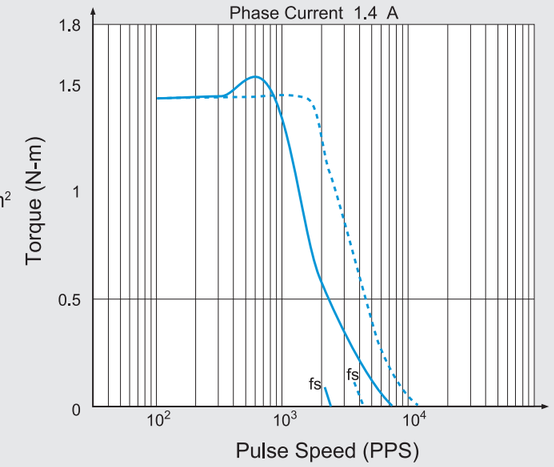
TS3624N2E3, N22E3

fs : Max. Activated Torque
Work Voltage : DC24V
—— Full Step : 0.72°/ STEP
- - - - Half Step : 0.36°/ STEP
Moment of Inertia of Pulley : 100g·cm²



TS3624N3E5, N23E5

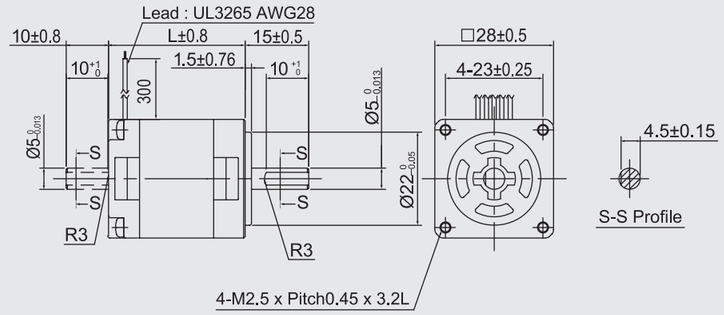
fs : Max. Activated Torque
Work Voltage : DC24V
—— Full Step : 0.72°/ STEP
- - - - Half Step : 0.36°/ STEP
Moment of Inertia of Pulley : 100g·cm²



□ 28MM

Lead Wiring – Unipolar
(1.1 inch sq)
RoHS Compliance /
Step Angle : 0.72˚

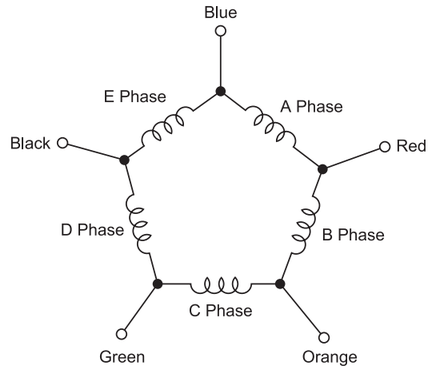
Dimensions



Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
∗SH5281-7241	∗SH5281-7211	0.72	0.75	1.05	0.44	0.041(5.81)	0.01	0.11	32
∗SH5285-7241	∗SH5285-7211	0.72	0.75	1.15	0.64	0.078(11.05)	0.022	0.2	51.5

∗Inventoried items

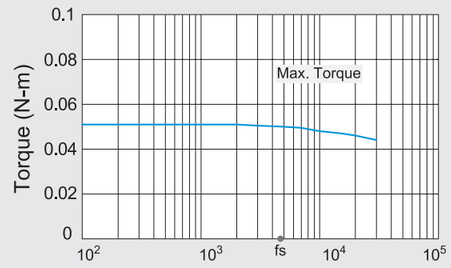
Wiring Diagram



Speed – Torque Characteristics

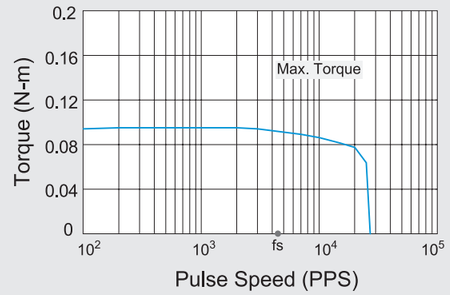
SH5281-7241, 7211

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 0.75A / phase,
5-phase Drive (Full Step)
JL : [0.01×10⁻⁴kg · M²(0.05 oz · in²)]



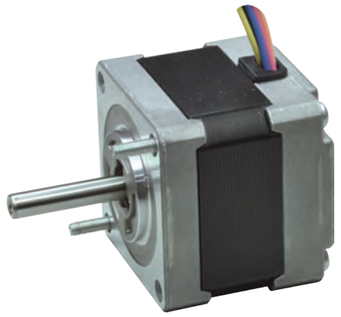
SH5285-7241, 7211

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 0.75 / phase,
5-phase Drive (Full Step)
JL : [0.01×10⁻⁴kg · M²(0.05 oz · in²)]

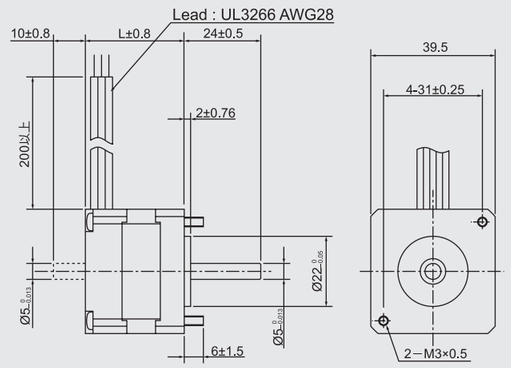


□ 39MM

Lead Wiring – Unipolar
(1.54 inch sq)
RoHS Compliance /
Step Angle : 0.36˚



Dimensions

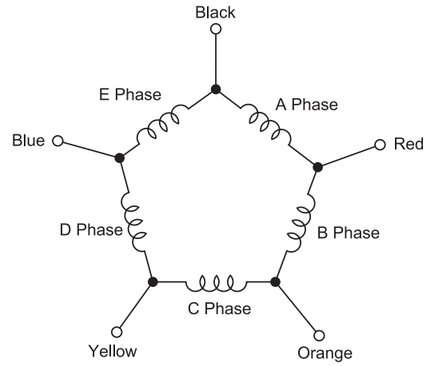


Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
103-4505-7040	103-4505-7010	0.36	0.75	2	1.97	0.078(21.24)	0.0182	0.17	31
103-4507-7040	＊103-4507-7010	0.36	0.75	2.35	3.8	0.108(15.29)	0.024	0.2	35.2

＊Inventoried items

SANYO 5-Phase Stepper Motor ▶ Frame Size: □39
□39MM
GMT GLOBAL INC.
5-Phase Stepper Motor
SANYO
Frame Size : □39

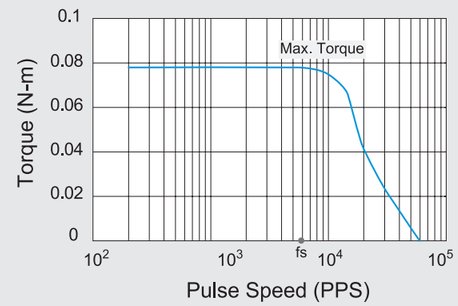
Wiring Diagram



Speed – Torque Characteristics

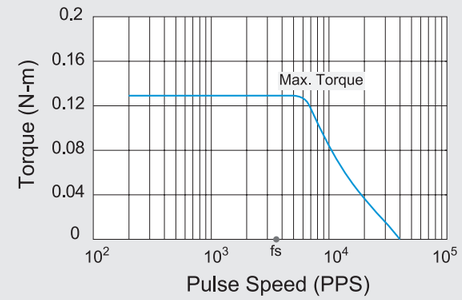
103-4505-7040, 7010

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 0.75A / phase,
5-phase Drive (Full Step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]



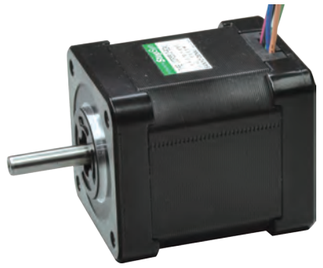
103-4507-7040, 7010

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 0.75A / phase,
5-phase Drive (Full Step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]

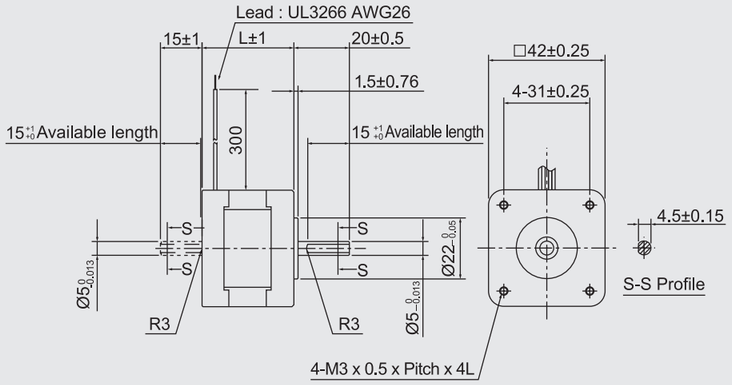


□ 42MM

Lead Wiring – Unipolar
(1.54 inch sq)
RoHS Compliance /
Step Angle : 0.72˚



Dimensions

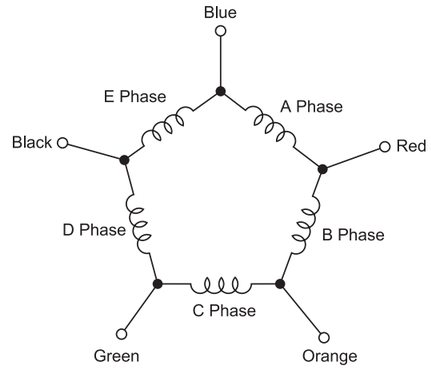


Model no.		Step angle	Current	Resistance	Inductance	Max. Holding torque	Rotor Inertia	Mass	Motor Case Length(L)
Single Shaft	Double Shaft	Deg	(L)	(Ω)	(mH)	N-m(oz-in)	g-cm²	(kg)	(mm)
103F5505-8241	＊103F5505-8211	0.72	1.4	0.55	0.4	0.127(18.25)	30	0.23	34
103F5508-8241	103F5508-8211	0.72	1.4	0.63	0.57	0.176(25)	53	0.28	40
103F5510-8241	＊103F5510-8211	0.72	1.4	0.8	0.7	0.245(34.72)	65	0.37	49

＊Inventoried items

SANYO 5-Phase Stepper Motor ▶ Frame Size: □42
□42MM

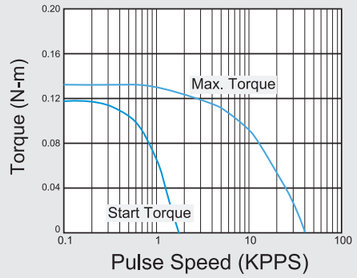
Wiring Diagram



Speed – Torque Characteristics

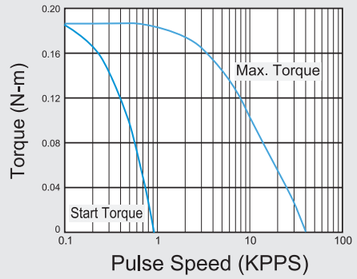
103F5505-8241, 8211

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1.4A / phase, 5-phase Drive (Full Step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]



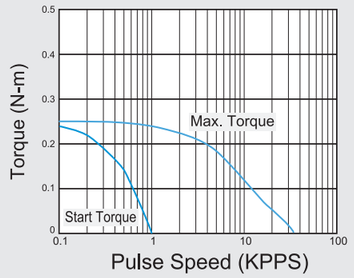
103F5508-8241, 8211

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1.4A / phase, 5-phase Drive (Full Step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]



103F5510-8241, 8211

Drive : Constant Current Drive
Work Voltage : DC24V
Work Current : 1.4A / phase, 5-phase Drive (Full Step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]

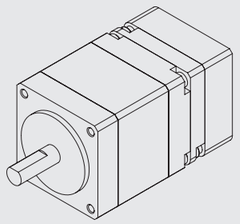


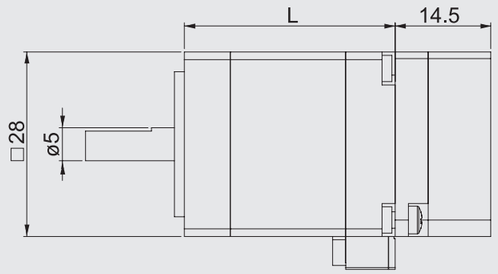
Feedback Stepper Motor
FB28、FB42

FB ① Series | 42 ② Frame Size | 2500 ③ Divisions | 33 ④ Motor Case Length

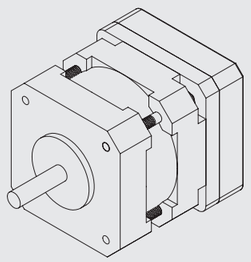
No.	Code	Description	Specifications
①	FB	Feedback Stepper Motor	
②	42	Motor Frame Size	28mm, 42mm
③	2500	Encoder divisions	2500 divisions / 0.144°
④	33	Motor Case Length (mm)	L : 31.3 mm、50.5 mm
		Motor Case Length (mm)	L : 33 mm 、47 mm

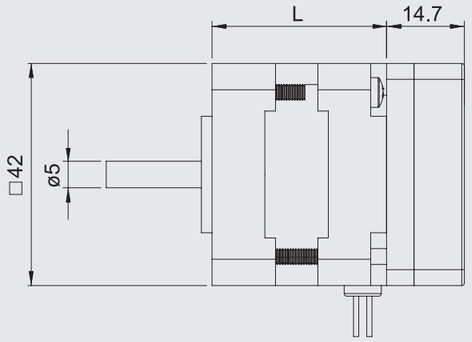
FB28





FB42





Wiring Instruction

Signal	Vcc	GND
Color	Brown	Blue
Signal	A+	A-
Color	Red	Orange
Signal	B+	B-
Color	Yellow	Green
Signal	Z+	Z-
Color	Purple	Gray

Specifications

Voltage		V	4.5~5.5
Current		mA	100(Max)
Signal			A+、A-、B+、B-、Z+、Z-
Frequency		Hz	300K
Output Voltage	High	V	2.4(min)
	Low	V	0.4(max)
Max. output current		mA	20
Max. allowable rpm		rpm	600
Operation/Storage temperature		°C	-20~+80
Operation			RH85%max
Humidity			non-collecting

Characters :

- High precision feedback: Optical encoder adopted for feedback, equipped with sub-division technology to have resolution up to 10,000 counts per rotation.
- Rigidity structure, minimum dimension: The smallest size in the market; common feedback type uses plug-in package with uniform size; compared to other brands, it is different in size, structure and function.
- Innovative closed-loop control: no limitation to driver type; available be equipped with 2-phase, 3-phase and 5-phase stepper motors or other pulse type motor driver.

Features:

- Micro-step feedback.
- High loading with point positioning on single axis.
- High positioning accuracy under 0.2mm between points.
- Available to be used for image depth control application.

Electromagnetic Brake Stepper Motor

Frame Size: 28 / 35 / 42

Specifications

Static friction torque〔Kgm〕(Nm)	0.012(0.12)
Input power	DC24V
Power (W) at 20°c	3.84

Features

Power-off brake is mainly used when power is off, with or without load, and several internal springs provide braking force. Such structure provides a good reliability. A typical application is Z-axis motorized stage to prevent slip and fall after power off.

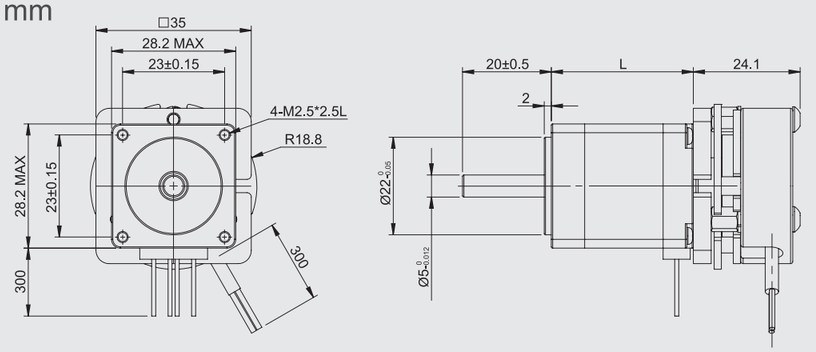
※ In use, please be careful that the driver does not produce torque after power is on. Please do not release brake until the motor maintains a torque.

Frame size	Brand	Model no.	Motor case length (L)
Frame 28 mm	TAMAGAWA	TS3641N11E2	33.5
	SANYO	SH2281-5231	32
		SH2285-5231	51.5
	GMT	2MS-N28D32A	31.3
		2MS-N28D45A	44.5

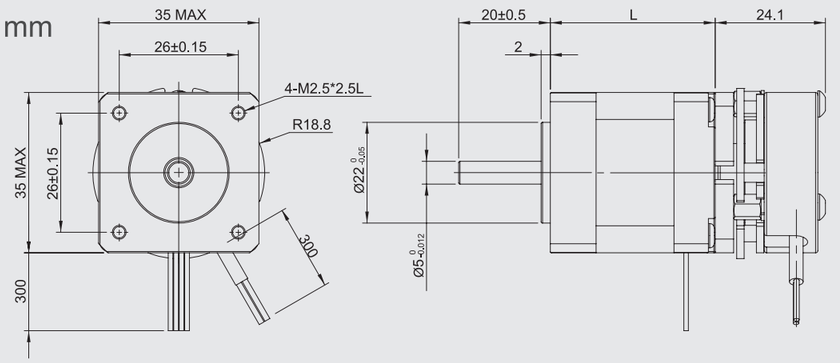
Frame size	Brand	Model no.	Motor case length (L)
Frame 35 mm	SANYO	SH3537-12U10	37
	GMT	2MS-N35D36A	36

Frame size	Brand	Model no.	Motor case length (L)
Frame 42 mm	TAMAGAWA	TS3617N13E8	47
	SANYO	103H5205-0411	33
		103H5210-0410	46
	GMT	2MS-N42D47A	47

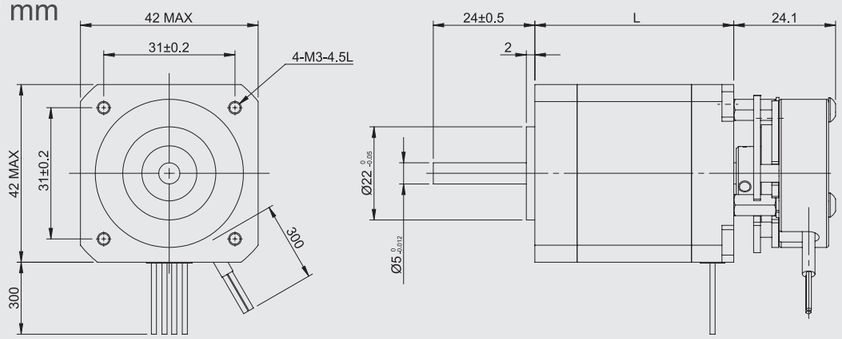
Frame 28 mm



Frame 35 mm



Frame 42 mm



* Please consult to regional sales for other specification needs.

Fully Digitized Stepper Motor Driver
DS2-022A、DS2-032A

Introduction

dspM series stepper motor driver offers an effective and low cost solution on the long-last stepper motor defects such as vibration, heating, noise, and et..

DS2-022A applies the cutting-edge 32-bit DSP technology to launch the unique dspM core technology. It can set any differential point within 1 ~ 512 microsteps and current of rated one that can meet most application requirements. Since DS2-022A applies the built-in differential calculating technology, it can reach the high-differential effort even under the low differential condition. Product can run smoothly with low noise at low, medium & high running speed. Except manually tune the driver, DS2-022A also equips auto-tune capability that will calculate out the optimum running parameter automatically for varied motors that will let each motor express its maximum performance.

DS2-022A

DS2-032A

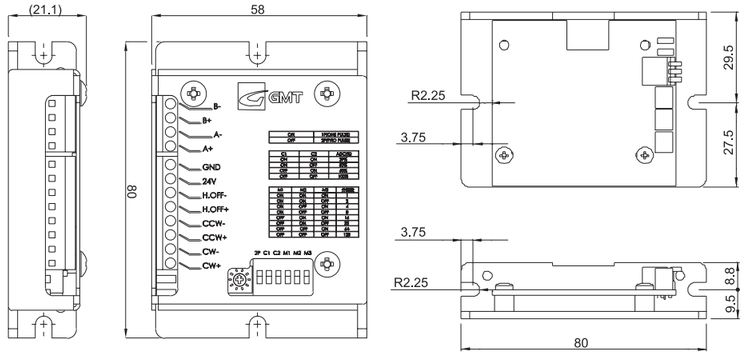
Features

- New 32-bit DSP technology
- Extreme low vibration & noise
- Built-in high resolution differential
- Auto-Tuning parameter-optimizing capability
- Intelligent current control to greatly reduce motor heat generated.
- Auto cut current to half when stationary.
- Drive 4-, 6-, 8-lead 2-phase stepper motor.
- Light-isolation and differential signal input
- Pulse response frequency meets up to 300 KHz
- Easy to set current up to 3.2A with 0.1A resolution of microsteps.
- Differentiation setting range 1 ~ 512.
- Built-in over-voltage, short-circuit and protection capability.

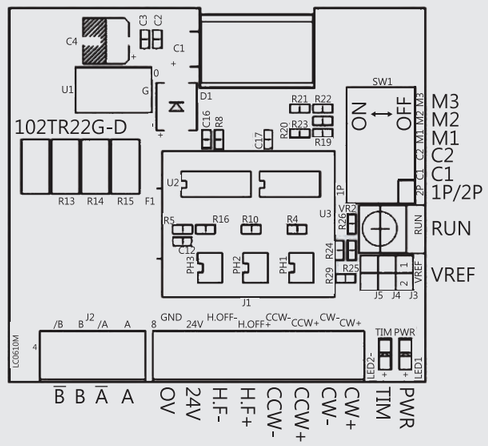
Electric indications

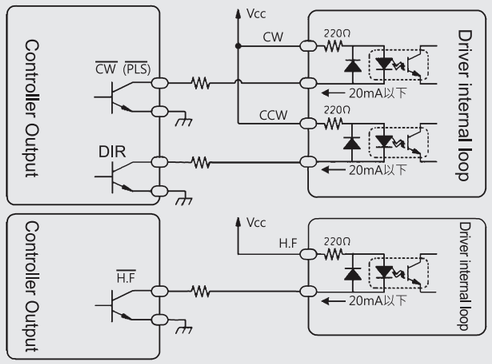
Specification		DS2-022A			DS2-032A		
		min	typ.	max	min	typ.	max
Current output	Amp	0.3	-	2.2	0.5	-	3.2
Power voltage	Vdc	18	24	40	20	24	40
I/O Fan-out	mA	7	10	16	7	10	16
Pulse frequency	KHz	-	-	200	-	-	300
Insulation resistance	MΩ	500	-	-	500	-	-

2-Phase Bipolar Micro Stepper Motor Driver
GTR22G-D



Wiring Diagram





- Wiring Description
  - A : Connect to motor A phase
  - $\overline{A}$: Connect to motor $\overline{A}$ phase
  - B : Connect to motor B phase
  - $\overline{B}$: Connect to motor $\overline{B}$ phase
- Input voltage pin description
  - 24V : Connect DC power 24V
  - 0V : Connect to DC power 0V

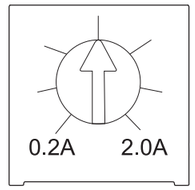
Features

- Low profile, convenient operation.
- Constant current control.
- Reverse Polarity Protection Circuits
- Drive current 0.2 A ~ 2A
- Optional auto current drop
- Extreme low power consumption, high efficiency switch on/off.
- Wide range signal input, and no need current limited resistance and switch.
- 8 options of divisions (1, 2, 4, 8, 16, 32, 64, 128)

Current Adjustment

- Drive current 0.2A ~ 2A, measureable VREF contact corresponding current as the following reference table

VREF	0.25V	0.5V	0.75V	1.00V	1.25V	1.50V	1.75V	2.00V	2.25V	2.5V
Current	0.2A	0.4A	0.6A	0.8A	1.0A	1.2A	1.4A	1.6A	1.8A	2A



1P/2P Set Up

1P/2P	Function
ON	1P(ONE PULSE)
OFF	2P(TWO PULSE)

ACD Set Up

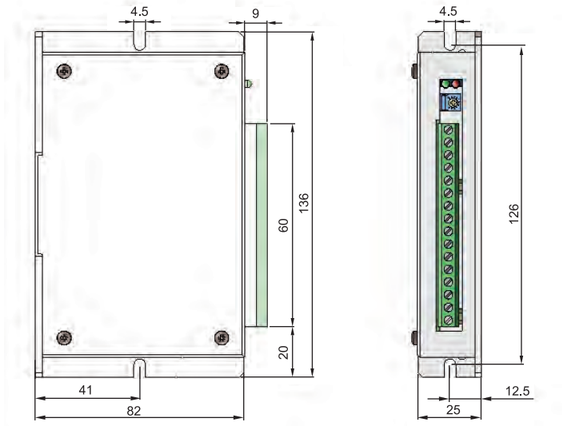
C1	C2	Auto Current drop rating
ON	ON	39%
ON	OFF	52%
OFF	ON	60%
OFF	OFF	100%

Division Set Up

M1	M2	M3	Divisions
ON	ON	ON	1
ON	ON	OFF	2
ON	OFF	ON	4
ON	OFF	OFF	8
OFF	ON	ON	16
OFF	ON	OFF	32
OFF	OFF	ON	64
OFF	OFF	OFF	128

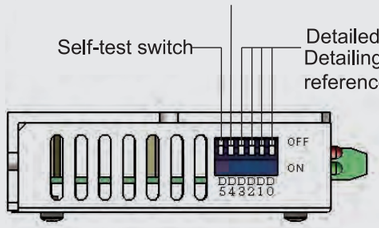
2-Phase Unipolar Micro Stepper Motor Driver

GTR24M3

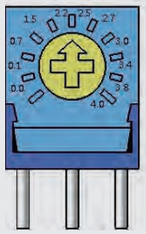


Figuration

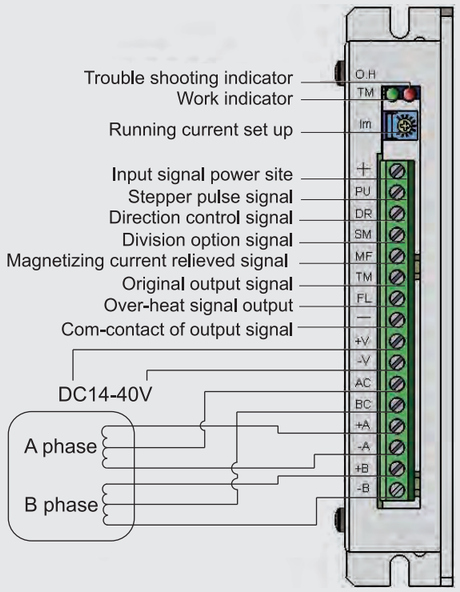
OFF: Pulse signal and direction control
ON: Positive pulse and reversed pulse control



Running current set up



Diagram



Features

- Miniature design, budget pricing
- 12 steps of micro-step angle setup available
- Input voltage DC12V ~ 40A
- High performance and high torque
- Balanced differential of stepper angle
- Drive current 0.5A ~ 4A

Input & Output Signal Description

PinNo	Mark	Signal name	Description
	O.H	Overheating indicator	Red light on
	RUN	Current setup button during running process	Output current adjustment of the motor
1	+	Power site of input signal	Please apply 5V power
2	PU	CW/PLS	Single pulse: Pulse input. Double pulse: Clockwise (CW) pulse input
3	DR	CCW/DIR	Single pulse: Rotation input. Double pulse: Counter clockwise (CCW) pulse input
4	SM	Divisions selection	“OFF” – To choose required divisions. “ON” – Half step
5	MF	Magnetizing current relieved signal	“OFF” – Current applied to motor. “ON” – Stop current applied to motor
6	TM	Phase original signal output	Output once in every 7.2 degrees
7	FL	Overheating signal output	Output signal when driver temperature is exceed to 70°C
8	-	Common ground of output signals	TM, FL common ground
9	+V	Power +	Drive power input DC12 ~ 40V
10	-V	Power -	

11	AC	A.COM	TROY	Yellow	TAMAGAWA	Yellow	SANYO DENKI	White
12	BC	B.COM		White		White		Black
13	+A	A+		Black		Black		Orange
14	-A	A-		Green	ORIENTAL	Green		Blue
15	+B	B+		Red		Red		Red
16	-B	B-		Blue		Blue		Yellow

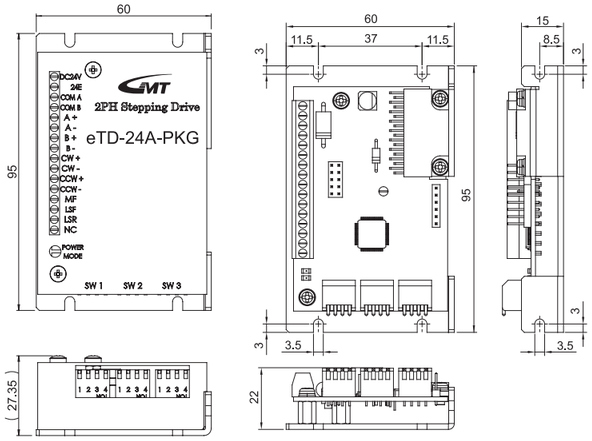
Dipswitch setup description

Divisions	1	2	4	5	8	10	20	25	40	50	100	200	200	200	200	200
D0	ON	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
D1	ON	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
D2	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
D3	ON	OFF	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
D4	ON	Double pulse(2P)CW+CCW							OFF	Single pulse(1P)PULSW+DIR						
D5	Self-test switches on, 7.5KPPS pulse is sent out by the driver															

2-Phase TOHAN Unipolar Micro Stepper Motor Driver

eTD-24A-PKG

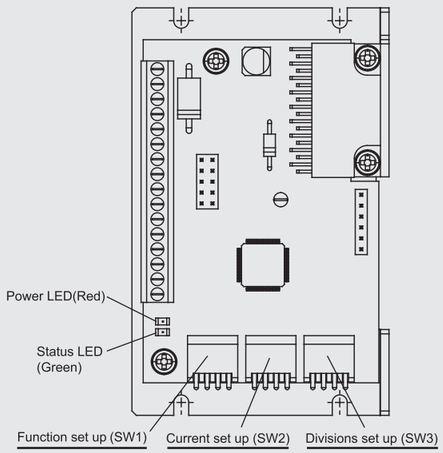
※ The driver is case covered as the standard type.
Without case is available to be ordered as model no.
eTD-24A on request.



Wiring Diagram

Interface · Terminal

Pin	Functions
1	Power + (DC+24V)
2	Power – (24E)
3	A phase COM (COM A)
4	B phase COM (COM B)
5	A phase
6	xA phase (xA)
7	B phase (B)
8	xxB phase (xB)
9	Clockwise pulse direction + (CW+/DIR+/PA+)
10	Clockwise pulse direction - (CW-/DIR-/PA-)
11	Counter clockwise pulse direction +
12	Counter clockwise pulse direction - (CCW-/PLS-/PB-)
13	Magnetizing current relieved instruction input (M.F)
14	Clockwise limitation input (LSF)
15	Counter clockwise limitation input (LSR)
16	Preparation output (SPOUT)



Features

- 16 different stepper divisions from 1/1 to max. 1/500 available.
- Low vibration and noise.

Specifications

Model no.	eTD-24A-PKG
Compatible motor	2-phase 6-leads / 8-leads stepper motor
Power voltage	DC24V ±10%3A MAX
Usage temperature range	0° ~ +40°C
Maintain Temperature	-10° ~ +60°C
Drive current	0.2A ~ 3A/Phase
Control type	Clockwise pulse PWM current control
Drive type	Unipolar constant current drive
Divisions	Half step, Full step, Micro-step (1~500)
Input signal	CW, CCW input : Open collector input, input resistance 220Ω L=0~0.5V H=4~5V
	Limitation input : Open collector input, input resistance 470Ω, reaction time 10mS L=0~0.5V H=4~5V
Max. input pulse frequency	150KPPS
Pulse input type	2 pulse : CW/CCW input 1 pulse : Pulse + direction instruction
	90° phase differential
Auto current drop	Pulse stops input in 100ms, current drops down approximately 50% while Auto-drop function activates.

◆ Functions setup (SW1)

Pulse input set up, Power down function setup, and piano keyboard switch to set up stepper angles.

SW no.	Functions	Setup					
1	Pulse type	OFF	2Pulse	ON	1Pulse	-	90° phase differential
2		OFF		OFF		ON	
3	Auto current drop	OFF: NIL / ON: YES					
4	No use	No use					

◆ Current setup switch (SW2)

◆ Output current setup during motor rotation.

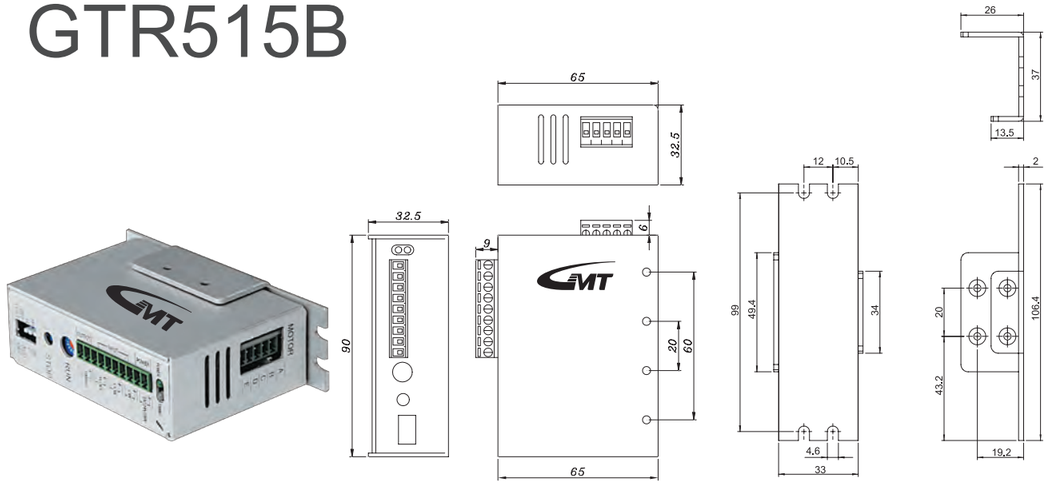
			S4	
S1	S2	S3	0	1
0	0	0	2A	1.2A
1	0	0	0.2A	1.4A
0	1	0	0.3A	1.5A
1	1	0	0.4A	1.8A
0	0	1	0.6A	2.1A
1	0	1	0.8A	2.5A
0	1	1	0.95A	2.8A
1	1	1	1A	3A

◆ Divisions setup switch (SW3)

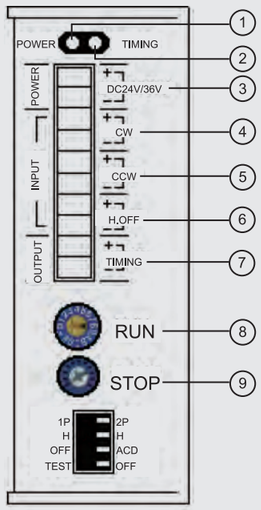
◆ Stepper angle = Basic stepper angle / divisions

			S4	
S1	S2	S3	0	1
0	0	0	1	16
1	0	0	2	20
0	1	0	2.5	25
1	1	0	4	40
0	0	1	5	50
1	0	1	8	100
0	1	1	10	250
1	1	1	15	500

5-Phase Half / Full Stepper Motor Driver
GTR515B

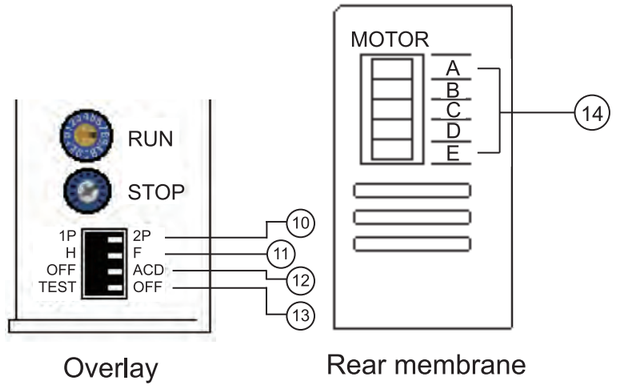


Features



Overlay

No.	Item	Types	Description
1	POWER	LED	Power indicator light on.
2	TIMING	LED	Phase original indicator light
3	DC24V/36V	I	Power + input
			Power ground input
4	CW	I	2 pulse : CW pulse signal input
			1 pulse : pulse input
5	CCW	I	2 pulse : CCW pulse signal input
			1 pulse : Running direction control
6	H.OFF	I	Holding torque relieved
7	TIMING	O	Phase original of magnetizing current output
8	RUN	SW	Running current adjustment
9	STOP	VR	Stop current adjustment



Overlay　　Rear membrane

No.	Item	Types	Description
10	1P/2P	SW	Pulse input type
11	H/F	SW	Stepper angel switch
12	OFF/ACD	SW	Auto current drop
13	TEST/OFF	SW	Self-test switch
14	MOTOR	O	Motor connection wires

※ Types description :
LED →LED light, SW → Switch, VR → Variation resistor, I → Input power, O→ Output

Specifications

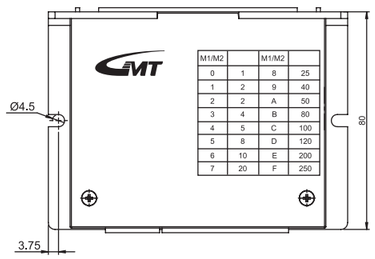
Driver model no.	GTR515B		
Driver current	0.36 ~ 1.4A / phase		
Compatible motor	0.75A/phase	1.4 A/phase	
Input power	DC24 ~ 36V ※1 MIN : 1.5A↑	DC24 ~ 36V ※1 MIN : 3.0A↑	
Magnetizing current type	Full step (0.72°, 4-phase magnetizing current) Half step (0.36°, 4~5 phase magnetizing current) Switchable		
Signal output/input type	Photo coupler input interface Open collector output interface		
Input signal	CW pulse input	2 pulse : Clockwise input, 1 pulse : pulse input	
Input signal	CCW pulse input	2 pulse : Counter clockwise input, 1 pulse: Running direction input.	
Input signal	H.OFF pulse input	Magnetizing current relieved (Holding off)	
Output signal	TIMING output	Phase original of magnetizing current output 1 signal in every 10 pulse during full step 1 signal in every 20 pulse during half step.	
Functions	◆ Auto current drop (ACD) ◆ Self-test function (TEST) ◆ Stepper angle switch (H/F) ◆ Pulse input type switch (1P/2P)		
Protection functions	◆ Reverse polarity protection circuits: Auto-cutoff action while reversed voltage input. ◆ Over-current protection: Auto-cutoff action while input current is exceed to the rated. ◆ Over-heating protection: Auto-convection while the driver temperature is higher than 80℃. ※2		
LED light	Power, Timing		
Profile dimensions	90(L)x65(W)x32(H)mm		
Weight	297g		
Usage temperature	0°C ~ 40°C		

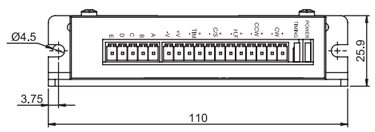
※ 1.【a】Max. transient voltage is 40V, please keep using voltage under 36V to prevent the driver from damages.
【b】Please refer to the recommend power supply per specification.

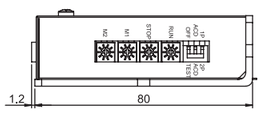
※ 2. While over-heating protection activates, power indicator light will blink and the motor will not magnetizing current. (Please secure well protection while the motor is applied to vertical usage with loading.) In case magnetizing current is required, please turn off power and eliminate the over-heating problem before restart.

5-Phase Micro-Step Stepper Motor Driver

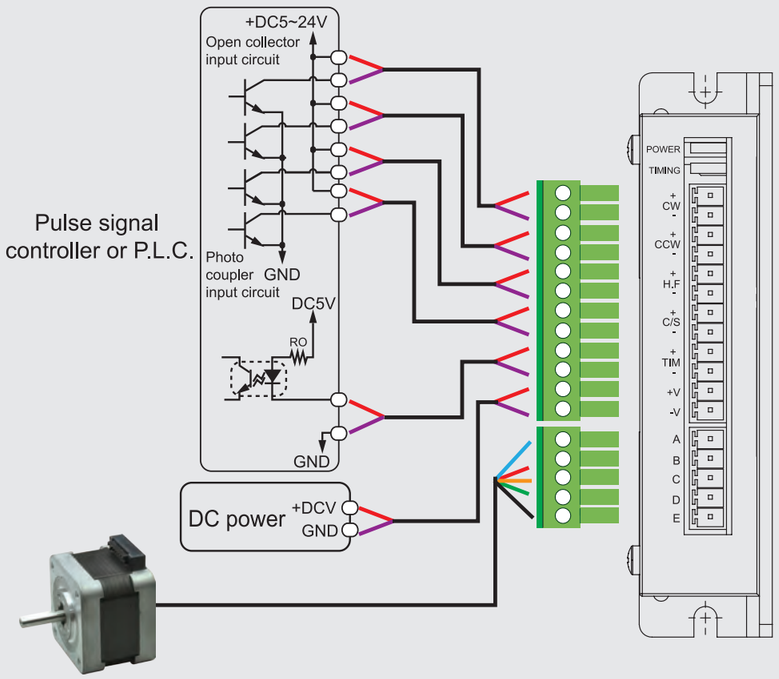
GTR514H-D





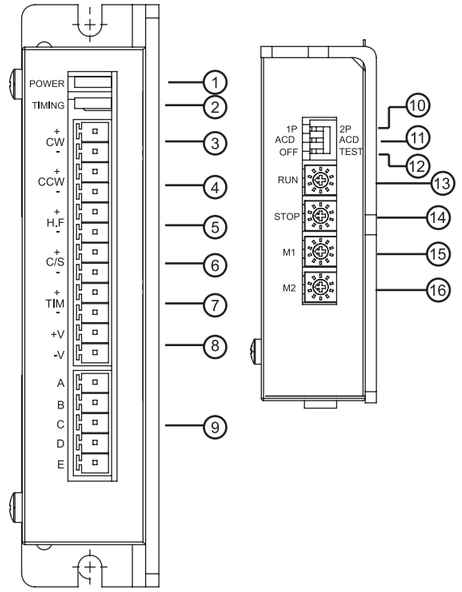


Wiring Diagram



Features

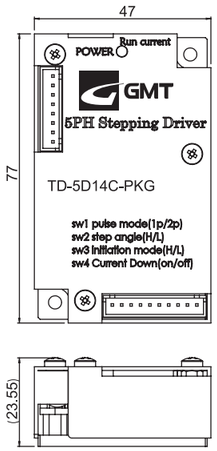
No.	Item	Description
1	POWER	Power indicator light on.
2	TIMING	Phase original indicator light
3	CW	CW/PULSE
4	CCW	CCW/DIR
5	H.F	Holding torque relieved
6	C/S	2 options of micro-division input
7	TIMING	Phase original of magnetizing current output
8	+V/-V	Power input terminal
9	A/B/C/D/E	Motor connection wires
10	1P/2P	Pulse input type
11	OFF/ACD	Auto current drop
12	TEST	Self-test switch
13	RUN	Running current adjustment
14	STOP	Stop current adjustment
15	M1	First micro-division option
16	M2	Second micro-division option

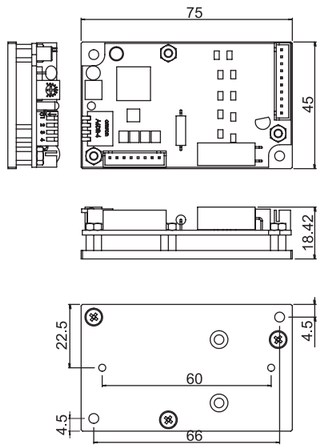


Specifications

Driver model no.		GTR514H-D
Input power (v)		DC24V ~ 3A or more
Driver current		0.36 ~ 1.4A / phase
Magnetizing current type		200 micro-step
Signal output/input type		Photo coupler input interface Open collector output interface
Input signal	CW pulse input	2 pulse : Clockwise input, 1 pulse : pulse input
	CCW pulse input	2 pulse : Counter clockwise input, 1 pulse : Running direction input.
	H.OFF pulse input	Magnetizing current relieved (Holding off)
	C/S pulse input	Two options of different divisions
Output signal	TIMING output	Phase original of magnetizing current output TIMING output while motor moves per 7.2°.
Functions		◆ Auto current drop (ACD) ◆ Self-test function (TEST) ◆ Stepper angle switch (H/F) ◆ Pulse input type switch (1P/2P)
Protection functions		Reverse polarity protection circuits: Auto-cutoff action while reversed voltage input, and restart after power in.
LED light Profile dimensions(MM)		Power, Timing 104(L)x80(W)x26(H)
Weight		209g
Isolation resistance		Resistance value measured between power input terminal and case is more than 100 MΩ while testing with DC500V resistor pin tester.
Isolation voltage resistance		Keep measuring voltage between the power input terminal and case for 1 minute through AC0.5KV/60Hz high voltage has to be no failure.
Usage temperature	Temperature	0° ~ +40°C
	Humidity	Under 85%
	Condition	Away from mist, dust, corrosiveness and inflammable air.

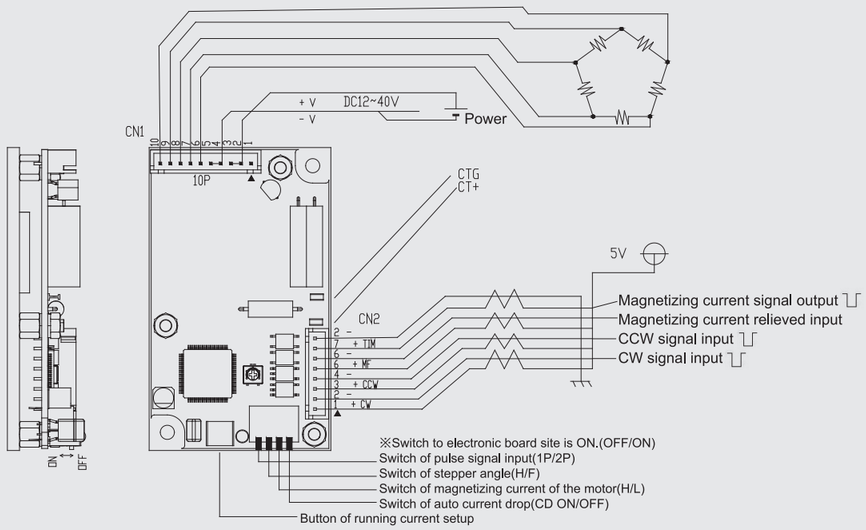
5-Phase Bipolar TOHAN Stepper Motor Driver
TD-5D14C-PKG





※ The driver is case covered as the standard type.
Without case is available to be ordered as model no.
TD-5D14C on request.

Wiring Diagram



Features

- Low profile, budget pricing.
- Fit to 5-lead motor
- Voltage input wide range in DC14V~40V
- High reliability design
- Magnetizing current signal output

Specifications

Model no.	TD-5D14C-PKG
Compatible motor	5-phase 5-lead / 10-lead stepper motor
Power voltage	DC12V ~ 40V 3A MAX
Usage temperature range	0° ~ +40°C
Maintain Temperature	-10° ~ +60°C
Drive current	0.75A ~ 1.5A/phase or 0.3A~0.75A/phase
Control type	Clockwise pulse PWM current control
Drive type	Bipolar fixed current drive
Divisions	Half step, Full step
Input signal	CW, CCW input : Open collector input, input resistance 220Ω L=0 ~ 0.5V H=3 ~ 5V
	M.F. input : Open collector input, input resistance 470Ω reaction time10mS L=0 ~ 0.5V H=3.3 ~ 5V
Max. input pulse frequency	100KPPS
Pulse input type (2P switch)	ON : 2 pulse : CW/CCW input OFF : 1 pulse : Pulse + direction instruction
RUN button	Output current setup while motor is running
M.F input	ON : Motor inagnetizing is off
Auto current drop	Pulse stops input in 100ms, current drops down approximately 60% while Auto-drop function activates.

Interface, Terminal

CN1	
Pin	Name
1	Clockwise pulse instruction + (CW+/DIR+)
2	Clockwise pulse instruction -(CW-/DIR-)
3	Counter clockwise pulse instruction +(CCW+/PLS+)
4	Counter clockwise pulse instruction -(CCW-/PLS-)
5	Magnetizing current relieved input (M.F+)
6	Magnetizing current relieved input (M.F-)
7	Magnetizing current original signal output (TIM-)
8	Magnetizing current original signal output (TIM-)

CN2	
Pin	Name
1	No function
2	Power + (DC12V~40V)
3	Power + (DC12V~40V)
4	Power - (DCV-)
5	Power - (DCV-)
6	Motor coil phase A
7	Motor coil phase B
8	Motor coil phase C
9	Motor coil phase D
10	Motor coil phase E

Delta

SERVO Motor / Driver

Servo motor

Motor frame size	40 mm	60 mm		40 mm	60 mm	
Motor brand	Delta					
Motor type	ECMA-C20401ES	ECMA-C20602ES	ECMA-C20604ES	ECMA-C10401ES	ECMA-C10602ES	ECMA-C10604ES
Rated power watt (W)	100	200	400	100	200	400
Rated torque (N-m)	0.32	0.64	1.27	0.32	0.64	1.27
Max. torque (N-m)	0.96	1.92	3.82	0.96	1.92	3.82
Rated RPM (r/min)	3000					
Max. RPM (r/min)	5000					
Rotor Inertia (× 10 kg·m²)	0.037	0.177	0.2770	0.037	0.177	0.2770
Encoder type	Increment type 17bit			Increment type 20bit		
Driver type	ASD-B2-0121-B	ASD-B2-0221-B	ASD-B2-0421-B	ASD-A2-0121-L	ASD-A2-0221-L	ASD-A2-0421-L

Driver

Driver series			ASDA-B2			ASDA-A2		
Driver model			ASD-B2-0121-B	ASD-B2-0221-B	ASD-B2-0421-B	ASD-A2-0121-L	ASD-A2-0221-L	ASD-A2-0421-L
Motor power watt			100W	200W	400W	100W	200W	400W
Phase / Voltage			3-phase 170~255VAC, 50/60Hz 5% Single phase 200~255VAC, 50/60Hz 5%			3-phase or single phase 200~230VAC, -15%~10%		
Rated current (A)			0.9	1.55	2.6	0.9	1.55	2.6
Positioning mode	Max. pulse input frequency	Differential input	500K(Low speed)/4M(High speed)PPS			500K(Low speed)/4M(High speed)PPS		
		Open collector input	200KPPS			200KPPS		
	Pulse instruction mode		Pulse & symbol : A phase + B phase CCW pulse + CW pulse			Pulse & symbol : A phase + B phase CCW pulse + CW pulse		
	Electronic gear ratio		1/50<N/M<25600 N : 1~(2²⁶-1) M:1~(2³¹-1)			1/50<N/M<25600 N : 1~(2¹⁵-1) M:1~(2¹⁵-1)		
Speed mode	Speed control range		1 : 5000			1 : 5000		
	Simulation instructions input	Voltage range	0~±10VDC			0~±10VDC		
		Input resistance	10KΩ			10KΩ		
		Time factor	2.2us			2.2us		
	Speed variation rate	Loading variation rate	0~100, Max. 0.01%			0~100, Max. 0.01%		
		Power variation rate	± 10%, Max. 0%			± 10%, Max. 0%		
		Temperature variation rate	0 ~ 50℃, Max. 0.1%			0 ~ 50℃, Max. 0.1%		
	Torque limitation type		Parameter setup or simulation data input			Parameter setup or simulation data input		
Torque mode	Simulation instructions input	Voltage range	0~±10VDC			0~±10VDC		
		Input resistance	10KΩ			10KΩ		
		Time factor	2.2us			2.2us		
	Speed limitation type		Parameter setup or simulation data input			Parameter setup or simulation data input		
Simulation monitoring output			Signal from 0 ~ ±8V monitored by parameter setup available			Signal from 0 ~ ±8V monitored by parameter setup available		
Digital input/output	Input		Servo activated or failure reset or increment switch or limitation of reversed running or torque limitation or reversed running or emergency stop or gear ratio options			Servo activated or failure reset or increment switch or limitation of reversed running or torque limitation or reversed running or emergency stop or gear ratio options		
	Output		A, B, Z wiring drive output			A, B, Z wiring drive output		
			Servo ready, servo starts, target speed achieved, target position achieved, positioning approached, servo alarm, zero-speed check			Servo ready, servo starts, target speed achieved, target position achieved, positioning approached, servo alarm, zero-speed check		
Protection functions			Overvoltage, low voltage, over-current, over-heating, over-loading, excessive deviation, regenerative anomaly, cache failure			Overvoltage, low voltage, over-current, over-heating, over-loading, excessive deviation, regenerative anomaly, cache failure		
Communication interface			RS232/RS485			RS232/RS485/CANopen/USB/DMCNET		

※ All specifications shown above are for selection purpose. For more detail technical data, please consult regional sales.

MITSUBISHI

SERVO Motor / Driver

Servo motor

Motor frame size	40 mm		60 mm	
Motor brand	MITSUBISHI			
Motor type	HG-KR053	HG-KR13	HG-KR23	HG-KR43
Rated power watt (W)	50	100	200	400
Rated torque (N-m)	0.16	0.32	0.64	1.3
Max. torque (N-m)	0.56	1.1	2.2	4.5
Rated RPM (r/min)	3000			
Max. RPM (r/min)	6000			
Rotor Inertia (× 10 kg·m²)	Increment type 22bit			
Encoder type	0.0450	0.0777	0.221	0.371
Driver type	MR-J4-10A		MR-J4-20A	MR-J4-40A

Driver

Driver series			MELSERVO-J4		
Driver model			MR-J4-10A	MR-J4-20A	MR-J4-40A
Motor power watt			50W/100W	200W	400W
Phase / Voltage			3 phase or single phase 170~264VAC, 50/60HZ		
Rated current (A)			0.9	1.5	2.6
Positioning mode	Max. pulse input frequency	Differential input	4MPPS		
		Open collector input	200KPPS		
	Pulse instruction mode		Pulse & symbol : A phase + B phase CCW pulse + CW pulse		
	Electronic gear ratio		1/10<N/M<4000 N : 1~(2²⁴-1) M1~(2²⁴-1)		
Speed mode	Speed control range		Simulation speed instruction 1 : 2000, Internal speed instruction 1 : 5000		
	Simulation instructions input	Voltage range	0~±10VDC		
		Input resistance	10KΩ		
	Speed variation rate	Loading variation rate	0~100, Max. 0.01%		
		Power variation rate	± 10%, Max. 0%		
		Temperature variation rate	25 ± 10℃, Max. 0.2%		
	Torque limitation type		Parameter setup or simulation data input		
Torque mode	Simulation instructions input	Voltage range	0~±8VDC		
		Voltage range	10KΩ~12KΩ		
	Speed limitation type		Parameter setup or simulation data input		
Simulation monitoring output			Signal from 0 ~ ±8V monitored by parameter setup available		
Digital input/output	Input		Servo activated or failure reset or increment switch or limitation of reversed running or torque limitation or reversed running or emergency stop or gear ratio options		
	Output		A, B, Z wiring drive output		
			Servo ready, servo starts, target speed achieved, target position achieved, positioning approached, servo alarm, zero-speed check		
Protection functions			Overvoltage, low voltage, over-current, over-heating, over-loading, excessive deviation, regenerative anomaly, cache failure		
Communication interface			RS422/USB		

※ All specifications shown above are for selection purpose. For more detail technical data, please consult regional sales.

YASKAWA

SERVO Motor / Driver

Servo motor

Motor frame size	40 mm		60 mm	
Motor brand	YASKAWA			
Motor type	SGMAV-A5ADA61	SGMAV-01ADA61	SGMAV-02ADA61	SGMAV-04ADA61
Rated power watt (W)	50	100	200	400
Rated torque (N-m)	0.159	0.318	0.637	1.27
Max. torque (N-m)	0.477	0.955	1.91	3.82
Rated RPM (r/min)	3000			
Max. RPM (r/min)	6000			
Rotor Inertia (× 10 kg·m²)	0.022	0.0364	0.116	0.19
Encoder type	Increment type 20bit			
Driver type	SGDV-R70A01	SGDV-R90A01	SGDV-1R6A01	SGDV-2R8A01

Driver

Driver series			Sigma V			
Driver model			SGDV-R70A01	SGDV-R90A01	SGDV-1R6A01	SGDV-2R8A01
Motor power watt			50W	100W	200W	400W
Phase / Voltage			3-phase or single phase 200 ~ 230VAC +10 ~ -15%, 50/60Hz			
Rated current (A)			0.66	0.91	1.6	2.8
Positioning mode	Max. pulse input frequency	Differential input	4M pps (A phase+B phase 1 M pps)			
		Open collector input	200KPPS			
	Pulse instruction mode		Pulse & symbol : A phase + B phase CCW pulse + CW pulse			
Speed mode	Speed control range		1 : 5000			
	Simulation instructions input	Voltage range	0~±10VDC			
		Input resistance	10KΩ			
	Speed variation rate	Loading variation rate	0~100, Max. 0.01% (Rated RPM)			
		Power variation rate	± 10%, Max. 0% (Rated RPM)			
		Temperature variation rate	0~50℃, Max. 0.1% (Rated RPM)			
	Torque limitation type		Parameter setup or simulation data input			
Torque mode	Simulation instructions input	Voltage range	0~±10VDC			
		Voltage range	10KΩ			
	Speed limitation type		Parameter setup or simulation data input			
Simulation monitoring output			Signal from 0 ~ ±8V monitored by parameter setup available			
Digital input/output	Input		Servo activated or failure reset or increment switch or limitation of reversed running or torque limitation or reversed running or emergency stop or gear ratio options			
	Output		A, B, Z wiring drive output			
			Servo ready, servo starts, target speed achieved, target position achieved, positioning approached, servo alarm, rotation check			
Protection functions			Overvoltage, low voltage, over-current, over-heating, over-loading, excessive deviation, regenerative anomaly.			
Communication interface			RS422/USB			

※ All specifications shown above are for selection purpose. For more detail technical data, please consult regional sales.

PANASONIC

SERVO Motor / Driver

Servo motor

Motor frame size	38 mm		60 mm	
Motor brand	PANASONIC			
Motor type	MSMD5AZG1S	MSMD012G1S	MSMD022G1S	MSMD042G1S
Rated power watt (W)	50	100	200	400
Rated torque (N-m)	0.16	0.32	0.64	1.3
Max. torque (N-m)	0.48	0.95	1.91	3.8
Rated RPM (r/min)	3000			
Max. RPM (r/min)	6000		5000	
Rotor Inertia (× 10 kg·m²)	0.025	0.051	0.14	0.26
Encoder type	Increment type 20bit			
Driver type	MADHT1505		MADHT1507	MADHT1510

Driver

Driver series			MINAS A5		
Driver model			MADHT1505	MADHT1507	MADHT1510
Motor power watt			50W/100W	200W	400W
Phase / Voltage			3-phase or single phase 200~240VAC +10~-15%, 50/60HZ		
Rated current (A)			0.9	1.5	2.6
Basic specifications	Control signal	Input	Common input use 10 Common input refers to parameter options.		
		Output	Common output use 6 Common output refers to parameter options.		
	Simulation signal/ Digital signal	Input	3 input (16Bit A/D input 1, 12BitA/D input 2)		
		Output	3 output (Simulation monitor output 2, digital monitor output)		
	Pulse signal	Input	2 input (Optical coupler input, differential input)		
		Output	4 input (differential output 3, open collector output 1)		
Position control	Pulse input	Differential input	4MPPS		
		Open collector input	200KPPS		
		Electronic gear ratio	1/1000~1000		
	Torque limitation type		Simulation input		
Speed control	Simulation input	Speed instruction input	Speed instruction input through simulation voltage Optical scale setup and instruction limitation referred to parameters.		
		Torque limitation	Limitation to positive and negative separately.		
	Internal speed instruction		Speed limitation is available setup through parameter.		
Torque mode	Simulation input	Torque instruction input	Speed instruction input through simulation voltage Optical scale setup and instruction limitation referred to parameters.		
	Speed limitation type		Speed limitation is available setup through parameter.		
Protection functions			Overvoltage, low voltage, over-current, over-heating, over-loading, excessive deviation, regenerative anomaly, and EEPROM failure.		
Communication interface			RS232/RS422/USB		

※ All specifications shown above are for selection purpose. For more detail technical data, please consult regional sales.

Connecting cable

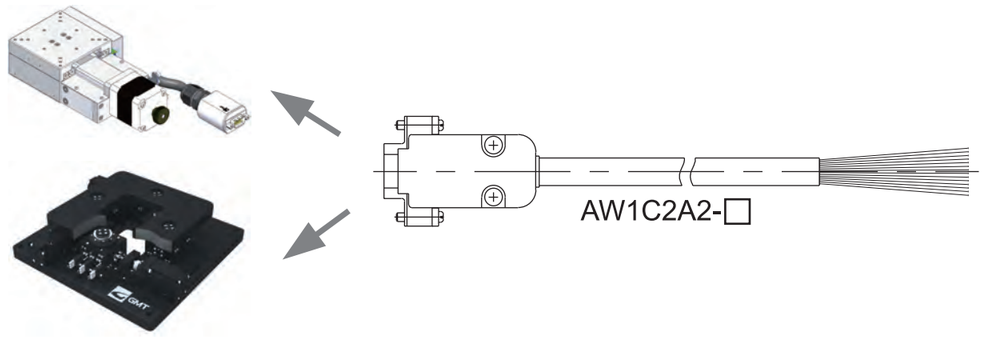
Description

A W 1 C 2 A 2 - 2

Type		Form		Structure		Connector category		Pins		Connector type		Pins	
A	Accessory	W	Cable	1	Single terminal	B	HRS(Female connector)	0	12	A	Dispersed wires	0	12
				2	Double terminals	C	D-SUB(Female connector)	1	14	B	HRS(Female connector)	1	14
						G	HRS(Male connector)	2	15	C	D-SUB(Female connector)	2	15
						H	D-SUB(Male connector)	3	25	G	HRS(Male connector)	3	25
						K	NJC(Female connector)	4	16	H	D-SUB(Male connector)	4	16
						L	NJC(Male connector)			K	NJC(Female connector)	5	8
										L	NJC(Male connector)	6	9

Length	
0.15	0.15 m
2	2 m
4	4 m
6	6 m
A	10 m

D-SUB Standard connection cable



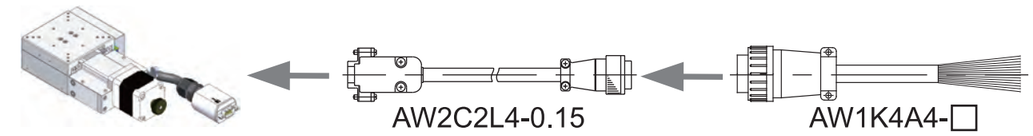
※ Connecting cable standard length is 2 meters

Pin definition on the 4-lead bipolar 2-phase stepper motor		
Code	Color	Functions
1		Lead A+
2		Lead A -
3		Lead B+
4		Lead B-
5		NONE
6		CWLS Output
7		CCWLS Output
8		CIRCLE ORG Output
9		Power input V+(24V)
10		ORG Output
11		Power input V-
12		FG
13		NONE
14		NONE
15	NONE	NONE

Pin definition on the 6/8-lead unipolar 2-phase stepper motor		
Code	Color	Functions
1		Lead A+
2		Lead A-
3		Lead B+
4		Lead B-
5		Lead A_COM
6		CWLS Output
7		CCWLS Output
8		CIRCLE ORG Output
9		Power input V+(24V)
10		ORG Output
11		Power input V-
12		FG
13		Lead B_COM
14		NONE
15	NONE	NONE

Pin definition on 5/10-lead 5-phase stepper motor		
Code	Color	Functions
1		Lead A
2		Lead B
3		Lead C
4		Lead D
5		Lead E
6		CWLS Output
7		CCWLS Output
8		CIRCLE ORG Output
9		Power input V+(24V)
10		ORG Output
11		Power input V-
12		FG
13		NONE
14		NONE
15	NONE	NONE

D-SUB TO NJC Converting cable



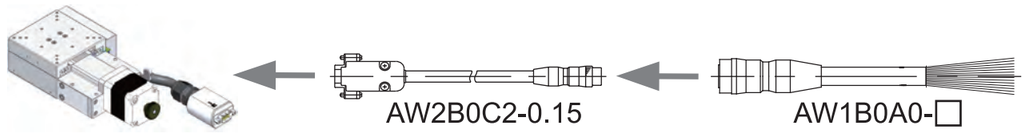
※ Connecting cable standard length is 2 meters

Pin definition on 5/10-lead 5-phase stepper motor		
Code	Color	Functions
1		Lead A
2		Lead B
3		Lead C
4		Lead D
5		Lead E
6		CWLS Output
7		CCWLS Output
8		CIRCLE ORG Output
9		Power input V+(24V)
10		ORG Output
11		Power input V-
12		FG
13		NONE
14		NONE
15	NONE	NONE

D-SUB male connector converted to NJC male connector			
Code	Color	Code	Functions
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	NONE
8		8	
9		9	NONE
10		10	
11		11	
12		12	
13		13	
14		14	
15	NONE	15	
		16	

Pin definition on 5/10-lead 5-phase stepper motor		
Code	Color	Functions
1		Lead A
2		Lead B
3		Lead C
4		Lead D
5		Lead E
6		CWLS Output
7	NONE	NONE
8		CCWLS Output
9	NONE	NONE
10		Power input V+(24V)
11		CIRCLE ORG Output
12		NONE
13		NONE
14		ORG Output
15		Power input V-
16		FG

D-SUB TO HRS Converting cable



※ Connecting cable standard length is 2 meters

Pin definition on 5/10-lead 5-phase stepper motor		
Code	Color	Functions
1		Lead A
2		Lead B
3		Lead C
4		Lead D
5		Lead E
6		CWLS Output
7		CCWLS Output
8		CIRCLE ORG Output
9		Power input V+(24V)
10		ORG Output
11		Power input V-
12		FG
13		NONE
14		NONE
15	NONE	NONE

D-SUB male connector converted to NJC male connector			
Code	Color	Code	Color
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	
11		11	
12		12	
13	NONE		
14	NONE		
15	NONE		

Pin definition on 5/10-lead 5-phase stepper motor		
Code	Color	Functions
1		Lead A
2		Lead B
3		Lead C
4		Lead D
5		Lead E
6		CWLS Output
7		CCWLS Output
8		CIRCLE ORG Output
9		Power input V+(24V)
10		ORG Output
11		Power input V-
12		FG

Recommendation of motor and driver

Stepper motor / Driver

Motor type	5-phase		2-phase unipolar		2-phase bipolar		
Brand	TAMAGAWA	SANYO	TAMAGAWA	SANYO	GMT		
Model no.	TS3664N1E2 TS3667N11E3 TS3667N3E7 TS3667N13E7 TS3624N3E5	SH5281-7241 SH5281-7211 SH5285-7241 SH5285-7211 103-4507-7010 103F5505-8241 103F5505-8211 103F5510-8241 103F5510-8211	TS3641N1E2 TS3641N11E2 TS3617N1E3 TS3617N11E3 TS3617N3E8 TS3617N13E10 TS3606N4E10	SH2281-5271 SH2281-5231 SH2285-5271 SH2285-5231 SH3537-12U40 SH3537-12U10 103H5205-0469 103H5205-0411 103H5208-0469 103H5208-0411 103H5210-0469 103H5210-0411	2MS-N20U33A 2MS-N20D33A 2MS-N28U32A 2MS-N28D32A 2MS-N28U45A 2MS-N28D45A	2MS-N35U36A 2MS-N35D36A 2MS-N42U33A 2MS-N42D33A 2MS-N42U47A 2MS-N42D47A	2MS-N57U41A 2MS-N57D41A
Driver model no.	GTR515B		GTR24M3		GTR22G-D		DS2-032A
Power input	24-36VDC		12-40VDC		18-30VDC		18-40VDC
Driver current	0.36-1.4 A		0-4 A		0.5-2 A		0.5-3.2 A
Magnetizing current type	Half/Full step		200 micro-step		128 micro-step		512 micro-step
Signal input type	Open collector (100K)		Open collector (200K)		Open collector (200K)		Open collector (200K)
Driver model no.	TD-5D14C-PKG		eTD-24A-PKG		DS2-022A	DS2-032A	
Power input	12-40VDC		24VDC		18-40VDC	18-40VDC	
Driver current	0.3-1.5 A		0.2-2 A		0.3-2.2 A	0.5-3.2 A	
Magnetizing current type	Half/Full step		500 micro-step		512 micro-step	512 micro-step	
Signal input type	Open collector (100K)		Open collector (150K)		Open collector (200K)	Open collector (200K)	
Driver model no.	GTR514H-D						
Power input	24-36VDC						
Driver current	0.75-1.4 A						
Magnetizing current type	250 micro-step						
Signal input type	Open collector (200K)						