CITIZEN

Minituarized AC Servomotors

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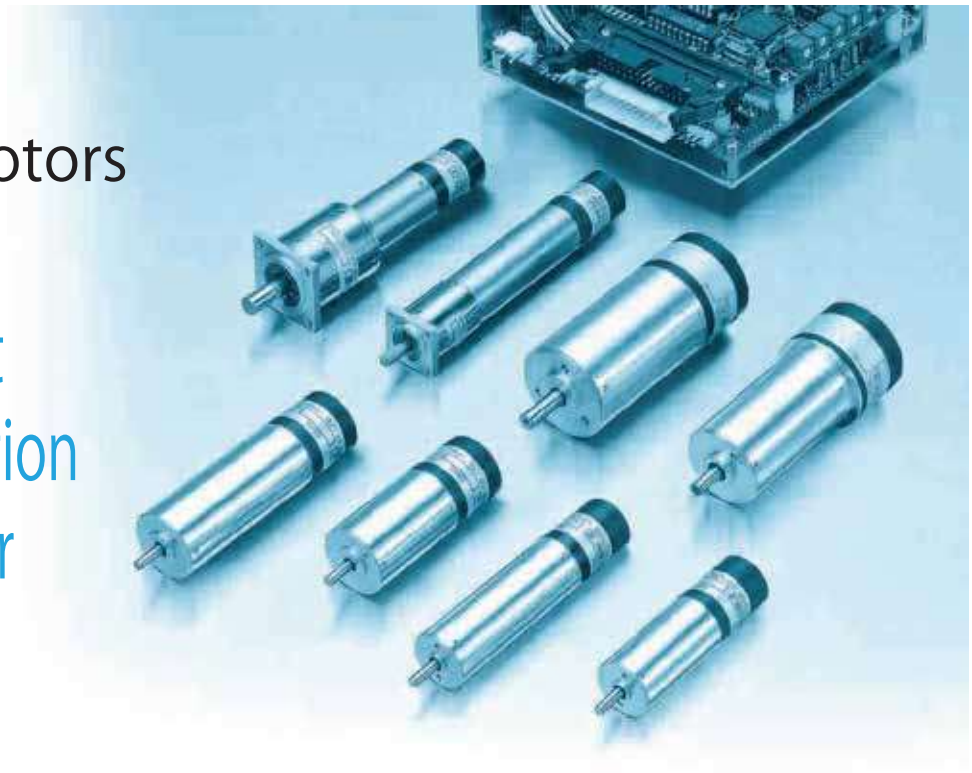
AC Servomotors



- Ultra Compact
- High Resolution
- High Power

Features

- By using a neodymium (NdFeB) magnet, it is compact, has excellent responsiveness and high output.
- It balances the rotor and reduces mechanical vibration.
- The slotless coil suppresses cogging and enables smooth rotation even at low speeds.
- It has achieved high precision positioning by installing a small high-pulse encoder.
- Because of the brushless structure, the life of the ball bearing is the only factor that affects the life of motor.
- The cable length between the motor and driver can be extended up to 10 meters. (For line driver type)

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Planetary Gearhead

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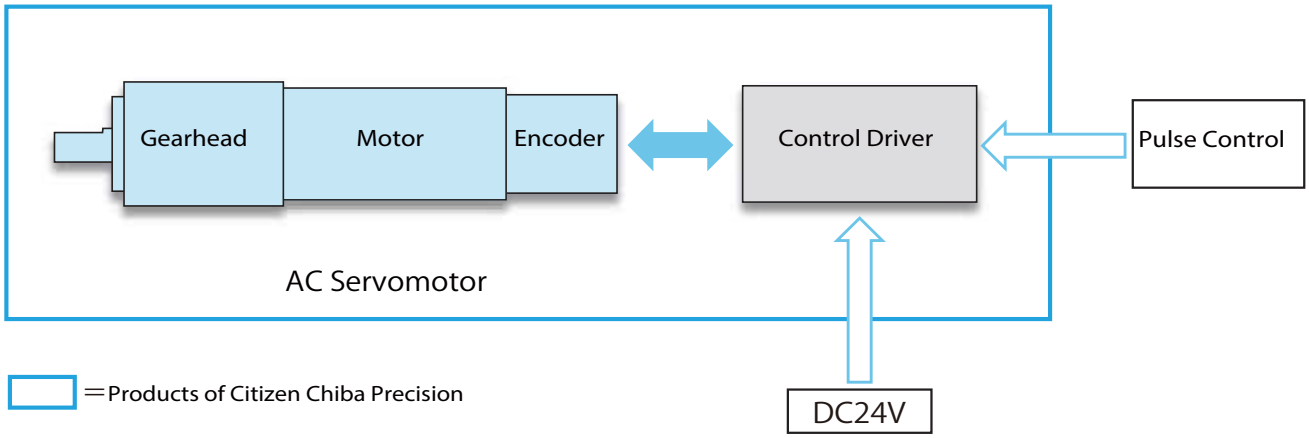
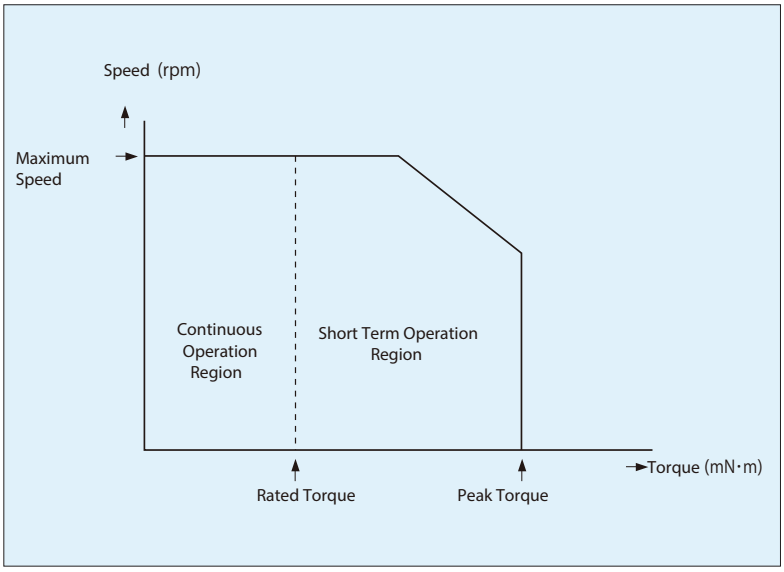
System Configuration



Basic Characteristics of AC Servomotor at Rated Voltage



Wire Color of Encoder

A Phase	·····	Yellow
B Phase	·····	Green
Z Phase	·····	White
+5V	·····	Red
GND	·····	Black

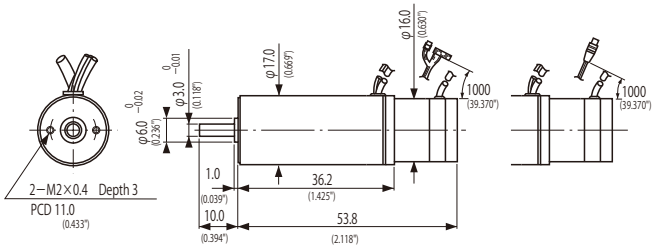
Model Number

EA − 1771G − C040 − 10 SMP 1／xxx

- Outer Diameter
- Length
- A：Without gearhead
  G：With gearhead
- C：For Open Collector Encoder
  D：For Line Driver Encoder
- Number of pulses of encoder
  040： 400P/R Available only for EA-17
  050： 500P/R Available only for EA-21
  100： 1000P/R Available for all EA-17・21・25・30
  200：2000P/R Available only for EA-25・EA-30
- 10 : EA-17・EA-21
  01 : EA-25・EA-30
- Gearhead Type
- Reduction Ratio

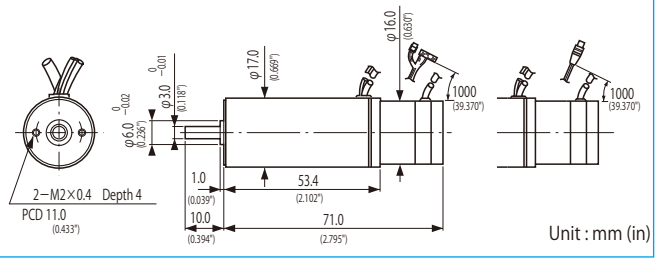
EA-1754 3W

Open Collector Encoder | Line Driver Encoder



EA-1771 5W

Open Collector Encoder | Line Driver Encoder



Unit : mm (in)

● Please see page 9 for driver specifications.
● We recommend Line Driver Encoder if a long transmission distanance is required between motor and driver. (Please see page10)

Specifications

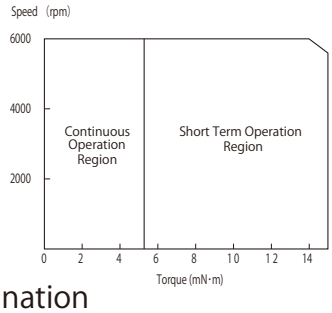
Items		EA-1754			EA-1771		
Rated Output	W	3.0			5.0		
Rated Torque	mN·m / gf·cm / oz·in	4.90	50	0.69	8.14	83	1.15
Rated Speed	rpm	6000					
Peak Torque	mN·m (gf·cm)	14.7 (150)			24.5 (250)		
Power Rate	w/s	220			330		
Torque Constant	mN·m/A	16.2			23.9		
EMF Constant	V/krpm	1.7			2.5		
Number of Poles	—	2					
Rotor Inertia (GD²/4)	g·cm²	1.1			2.0		
Winding Insulation Class	—	Class F					
Encoder	P/R	Incremental Photo Encoder 400 or 1000					
Operating Ambient Temperature /Humidity	—	0～40℃ / Below 85% RH without condensation					
Storage Temperature / Humidity	—	−20～60℃ / Below 85% RH without condensation					
Weight	g	80			105		

*Note : The above values are the specifications when an aluminum heat-sink (57×57×5t) is attached to the motor flange.

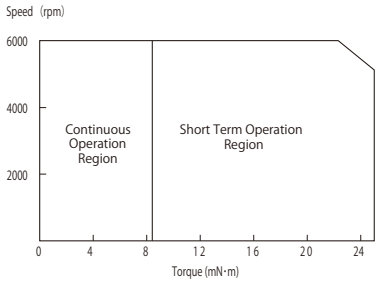
Basic Characteristics (at DC 24V)

● Drivers for these models : EAD-18C(D)-012

EA-1754

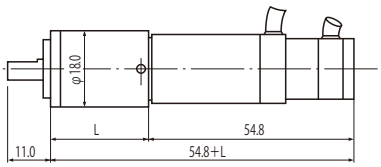


EA-1771

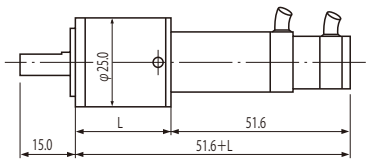


Example of Combination

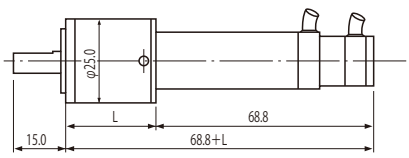
Gearhead + Motor + Encoder
EA−1754G SJP 1/xxx



Gearhead + Motor + Encoder
EA−1754G SMP 1/xxx



Gearhead + Motor + Encoder
EA−1771G SMP 1/xxx



* Please see page 7 for mounting parts and the shape of output shaft.

Rated Specifications of Geared Motors

● EA−1754G SJP 1/xxx

	Reduction Ratio		4	6	16	24	36	64	96	144	216	256	384	576	*864	*1296
SJP	Rated Torque	N·m	0.016	0.024	0.050	0.076	0.118	0.157	0.245	0.363	0.539	0.520	0.775	1.157	1.177	1.177
		oz·in	2.22	3.33	7.08	10.69	16.66	22.22	34.72	51.38	76.38	73.60	109.71	163.87	166.65	166.65
	Rated Speed	rpm	1500	1000	375	250	167	94.0	62.5	41.5	28.0	23.5	15.5	10.5	7.0	4.5
	Length	mm	19.9	19.9	22.9	22.9	22.9	26.7	26.7	26.7	26.7	30.9	30.9	30.9	30.9	30.9

● EA−1754G SMP 1/xxx

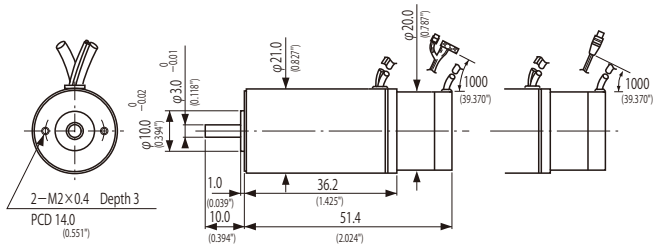
	Reduction Ratio		4	6	16	24	36	64	96	144	216	256	384	576	864	*1296
SMP	Rated Torque	N·m	0.017	0.025	0.057	0.084	0.127	0.196	0.284	0.431	0.647	0.657	0.981	1.471	2.206	2.942
		oz·in	2.36	3.61	8.05	11.94	18.05	27.77	40.27	61.10	91.66	93.04	138.87	208.31	312.46	416.62
	Rated Speed	rpm	1500	1000	375	250	167	94.0	62.5	41.5	28.0	23.5	15.5	10.5	7.0	4.5
	Length	mm	25.3	25.3	29.7	29.7	29.7	35.3	35.3	35.3	35.3	41.1	41.1	41.1	41.1	41.1

● EA−1771G SMP 1/xxx

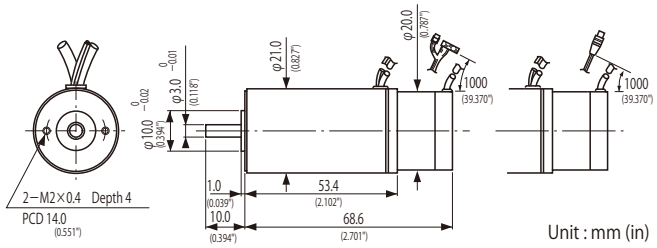
	Reduction Ratio		4	6	16	24	36	64	96	144	216	256	384	576	*864	*1296
SMP	Rated Torque	N·m	0.027	0.042	0.094	0.137	0.216	0.314	0.481	0.716	1.079	1.089	1.638	2.442	2.942	2.942
		oz·in	3.89	5.97	13.33	19.44	30.55	44.44	68.05	101.38	152.76	154.15	231.92	345.79	416.62	416.62
	Rated Speed	rpm	1500	1000	375	250	167	94.0	62.5	41.5	28.0	23.5	15.5	10.5	7.0	4.5
	Length	mm	25.3	25.3	29.7	29.7	29.7	35.3	35.3	35.3	35.3	41.1	41.1	41.1	41.1	41.1

*1 : When using the reduction ratio marked with *, please use the rated torque within the range that does not exceed the allow able output torque of the gearhead.
*2 : These are the values for continuous operation with a uniform load.

EA-2151 6 W Open Collector Encoder Line Driver Encoder



EA-2169 10 W Open Collector Encoder Line Driver Encoder



Unit : mm (in)

● Please see page 9 for driver specifications.
● We recommend Line driver Encoder if a long transmission distance is required between motor and driver. (Please see page10)

Specifications

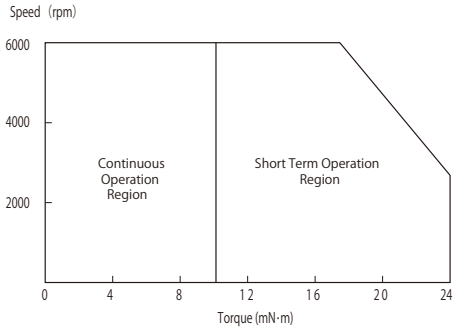
Items		EA-2151			EA-2169		
Rated Output	W	6.0			10.0		
Rated Torque	mN·m | gf·cm | oz·in	9.81	100	1.39	16.38	167	2.32
Rated Speed	rpm	6000					
Peak Torque	mN·m (gf·cm)	23.5 (240)			40.2 (410)		
Power Rate	w/s	245			400		
Torque Constant	mN·m/A	23.9			29.6		
EMF Constant	V/krpm	2.5			3.1		
Number of Poles	—	2					
Rotor Inertia (GD²/4)	g·cm²	3.9			6.7		
Winding Insulation Class	—	Class F					
Encoder	P/R	Incremental Photo Encoder 500 or 1000					
Operating Ambient Temperature /Humidity	—	0～40℃ / Below 85% RH without condensation					
Storage Temperature / Humidity	—	−20～60℃ / Below 85% RH without condensation					
Weight	g	125			165		

*Note : The above values are specifications when an aluminum heat-sink (57×57×5t) is attached to the motor flange.

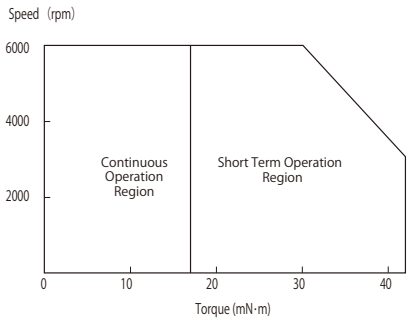
Basic Characteristics (at DC 24V)

● Drivers for these models : EAD-18C(D)-012

EA-2151



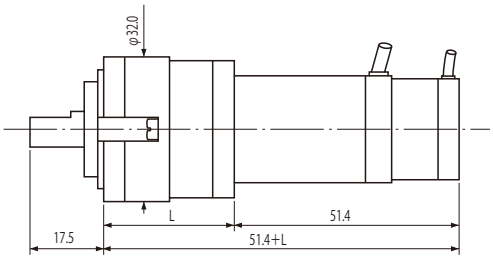
EA-2169



Example of Combination

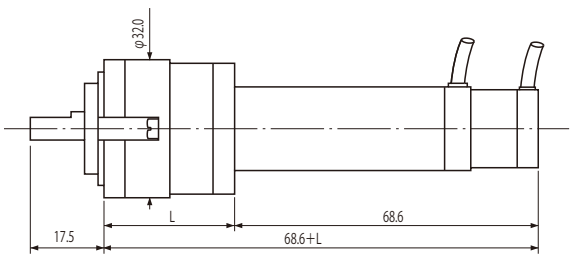
Gearhead + Motor + Encoder

EA−2151G SAP 1／xxx



Gearhead + Motor + Encode

EA−2169G SAP 1／xxx



* Please see page 7 for mounting parts and the shape of output shaft

Rated Specifications of Geared Motors

● EA−2151G SAP 1／xxx

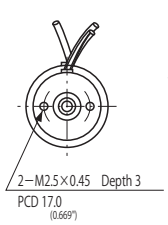
	Reduction Ratio		4	6	16	24	36	64	96	144	216	256	384	576	864	※1296
SAP	Rated Torque	N·m	0.033	0.050	0.113	0.167	0.255	0.382	0.579	0.863	1.294	1.304	1.961	2.942	4.413	4.707
		oz·in	4.72	7.08	15.97	23.61	36.11	54.16	81.93	122.21	183.31	184.70	277.74	416.62	624.92	666.59
	Rated Speed	rpm	1500	1000	375	250	167	94.0	62.5	41.5	28.0	23.5	15.5	10.5	7.0	4.5
	Length	mm	24.8	24.8	28.9	28.9	28.9	34.5	34.5	34.5	34.5	40.5	40.5	40.5	40.5	40.5

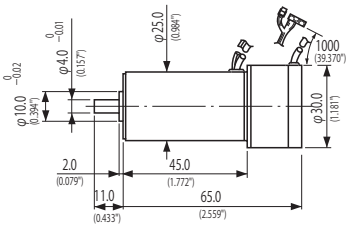
● EA−2169G SAP 1／xxx

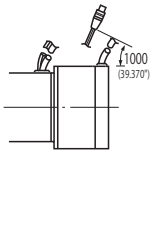
	Reduction Ratio		4	6	16	24	36	64	96	144	216	256	384	576	※864	※1296
SAP	Rated Torque	N·m	0.056	0.083	0.186	0.284	0.422	0.637	0.971	1.442	1.961	2.177	3.275	4.707	4.707	4.707
		oz·in	7.92	11.80	26.39	40.27	59.71	90.27	137.48	204.14	277.74	308.30	463.83	666.59	666.59	666.59
	Rated Speed	rpm	1500	1000	375	250	167	94.0	62.5	41.5	28.0	23.5	15.5	10.5	7.0	4.5
	Length	mm	24.8	24.8	28.9	28.9	28.9	34.5	34.5	34.5	34.5	40.0	40.0	40.0	40.0	40.0

*1 : When using the reduction ratio marked with *, please use the rated torque within the range that does not exceed the allowable output torque of the gearhead.
*2 : These are the values for continuous operation with a uniform load.

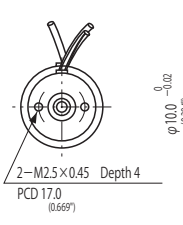
EA-2565 12W Open Collector Encoder Line Driver Encoder

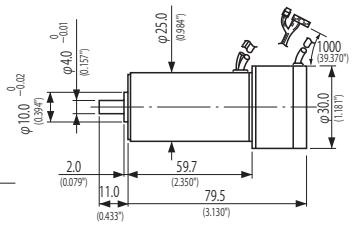


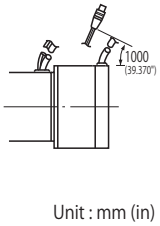




EA-2580 20W Open Collector Encoder Line Driver Encoder







Unit : mm (in)

● Please see page 9 for driver specifications.
● We recommend Line driver Encoder if a long transmission distance is required between motor and driver. (Please see page10)

Specifications

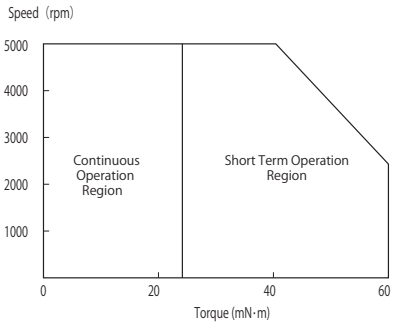
Items		EA-2565			EA-2580		
Rated Output	W	12.0			20.0		
Rated Torque	mN·m | gf·cm | oz·in	23.54	240	3.33	39.23	400	5.55
Rated Speed	rpm	5000					
Peak Torque	mN·m (gf·cm)	58.8 (600)			117.6 (1200)		
Power Rate	w/s	740			1420		
Torque Constant	mN·m/A	26.7			30.6		
EMF Constant	V/krpm	2.8			3.2		
Number of Poles	—	2					
Rotor Inertia ($GD^2/4$)	g·cm²	7.5			10.8		
Winding Insulation Class	—	Class F					
Encoder	P/R	Incremental Photo Encoder 1000 or 2000					
Operating Ambient Temperature /Humidity	—	0 ～40℃ / Below 85% RH without condensation					
Storage Temperature / Humidity	—	−20～60℃ / Below 85% RH without condensation					
Weight	g	230			270		

*Note : The above values are specifications when an aluminum heat-sink (71×71×5t) is attached to the motor flange.

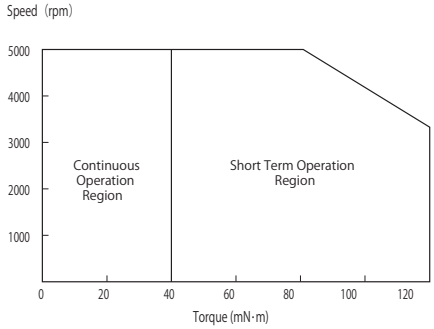
Basic Characteristics (at DC 24V)

● Drivers for these models : EAD-18C(D)-030

EA-2565

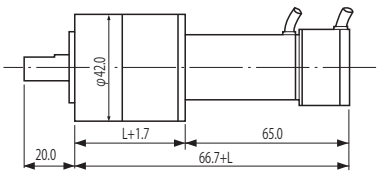


EA-2580

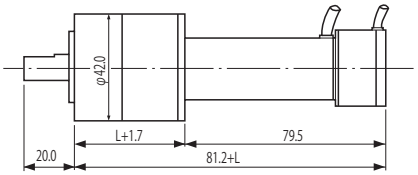


Example of Combination

Gearhead + Motor + Encoder
EA −2565G SFP 1 ／xxx



Gearhead + Motor + Encoder
EA −2580G SFP 1 ／xxx



* Please see page 7 for mounting parts and the shape of output shaft.

Rated Specifications of Geared Motors

● EA −2565G SFP 1 ／xxx

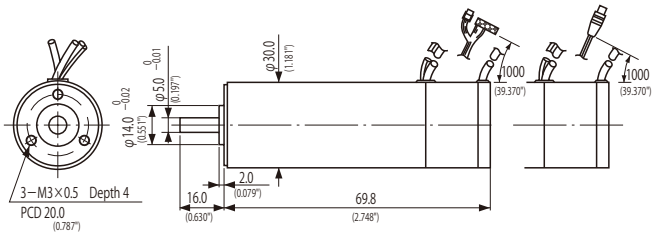
	Reduction Ratio		5.43	20.73	29.47	79.24	112.52	160.00	302.15	429.63	610.82	※868.44
SFP	Rated Torque	N·m	0.118	0.392	0.559	1.363	1.932	2.746	4.697	6.678	9.493	9.807
		oz·in	16.66	55.55	79.16	193.03	273.58	388.84	665.20	945.72	1344.28	1388.72
	Rated Speed	rpm	921	241	170	63.1	44.4	31.3	16.5	11.6	8.2	5.8
	Length	mm	36.5	43.8	43.8	53.5	53.5	53.5	63.8	63.8	63.8	63.8

● EA −2580G SFP 1 ／xxx

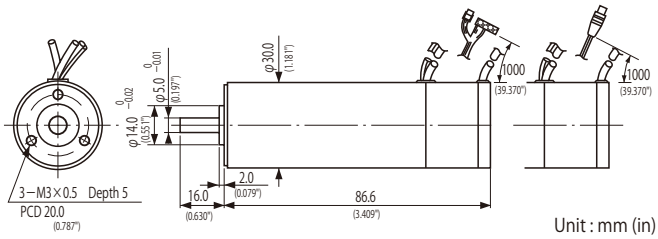
	Reduction Ratio		5.43	20.73	29.47	79.24	112.52	160.00	302.15	429.63	※610.82	※868.44
SFP	Rated Torque	N·m	0.196	0.657	0.932	2.265	3.217	4.580	7.845	9.807	9.807	9.807
		oz·in	27.77	93.04	131.93	320.79	455.50	648.53	1110.98	1388.72	1388.72	1388.72
	Rated Speed	rpm	800	216	153	56.3	39.6	27.8	15.0	11.6	8.2	5.8
	Length	mm	36.5	43.8	43.8	53.5	53.5	53.5	63.8	63.8	63.8	63.8

*1 : When using the reduction ratio marked with *, please use the rated torque within the range that does not exceed the allowable output torque of the gearhead.
*2 : These are the values for continuous operation with a uniform load.

EA-3070 20 W Open Collector Encoder Line Driver Encoder



EA-3087 30 W Open Collector Encoder Line Driver Encoder



Unit : mm (in)

● Please see page 9 for driver specifications.
● We recommend Line driver Encoder if long transmission distance is required between motor and driver. (Please see page10)

Specifications

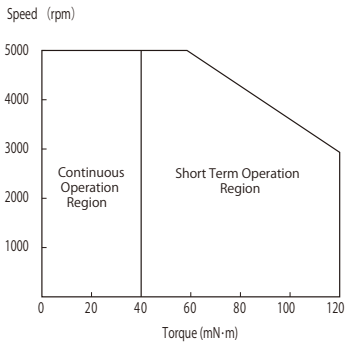
Items		EA-3070			EA-3087		
Rated Output	W	20			30		
Rated Torque	mN·m / gf·cm / oz·in	39.23	400	5.55	58.84	600	8.33
Rated Speed	rpm	5000					
Peak Torque	mN·m (gf·cm)	117.6 (1200)			176.4 (1800)		
Power Rate	w/s	915			1430		
Torque Constant	mN·m/A	37.2			39.2		
EMF Constant	V/krpm	3.9			4.1		
Number of Poles	—	2					
Rotor Inertia (GD²/4)	g·cm²	16.8			24.2		
Winding Insulation Class	—	Class F					
Encoder	P/R	Incremental Photo Encoder 1000 or 2000					
Operating Ambient Temperature /Humidity	—	0～40℃ / Below 85% RH without condensation					
Storage Temperature / Humidity	—	−20～60℃ / Below 85% RH without condensation					
Weight	g	310			350		

*Note : The above values are specifications when an aluminum heat-sink (82×82×5t) is attached to the motor flange.

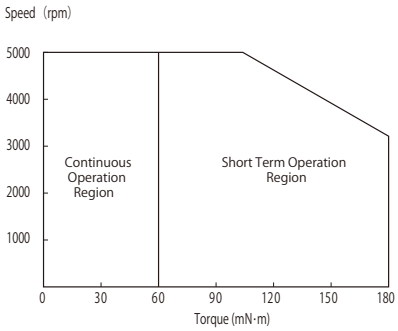
Basic Characteristics (at DC 24V)

● Drivers for these models : EAD-18C(D)-030

EA-3070

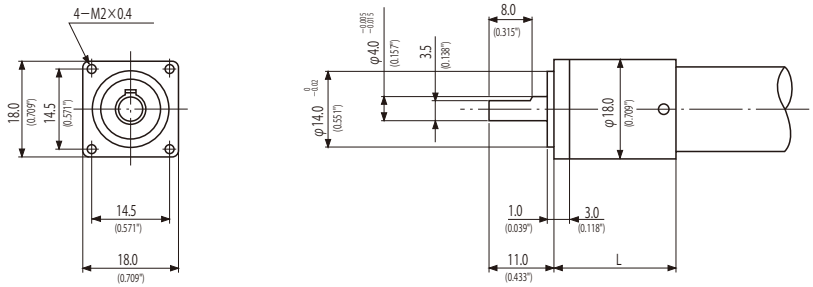


EA-3087



※ EA-30 Series does not have gearhead.

SJP : φ18

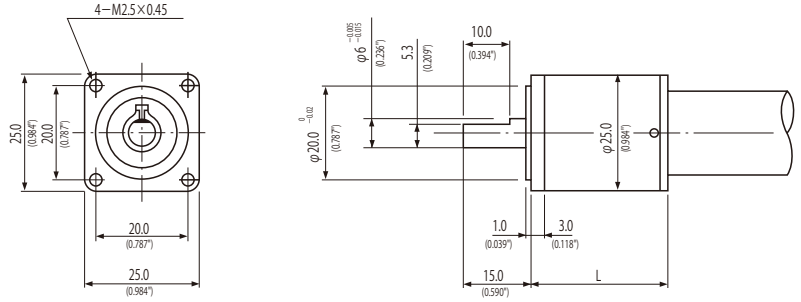


Unit : mm (in)

Specifications

Reduction Ratio	Allowable Output Torque			Allowable Output	Maximum Speed	Efficiency	Allowable Radial Load	Allowable Thrust Load	Backlash	Length		Weight
	Nm	kgf·cm	oz·in	W	rpm	%	N(kgf)	N(kgf)	deg	mm	inch	g
1/4.00	0.127	1.3	18.05	4.0	12000	80	10.0 (1.0)	10.0 (1.0)	1.5	19.9	0.783	26
1/6.00	0.127	1.3	18.05	4.0	12000	80	10.0 (1.0)	10.0 (1.0)	1.5	19.9	0.783	26
1/16.00	0.265	2.7	37.50	3.2	12000	64	11.0 (1.1)	15.0 (1.5)	1.5	22.9	0.902	31
1/24.00	0.265	2.7	37.50	3.2	12000	64	11.0 (1.1)	15.0 (1.5)	1.5	22.9	0.902	31
1/36.00	0.265	2.7	37.50	3.2	12000	64	11.0 (1.1)	15.0 (1.5)	1.5	22.9	0.902	31
1/64.00	0.569	5.8	80.55	2.5	12000	51	12.0 (1.2)	30.0 (3.0)	1.5	26.7	1.051	38
1/96.00	0.569	5.8	80.55	2.5	12000	51	12.0 (1.2)	30.0 (3.0)	1.5	26.7	1.051	38
1/144.00	0.569	5.8	80.55	2.5	12000	51	12.0 (1.2)	30.0 (3.0)	1.5	26.7	1.051	38
1/216.00	0.569	5.8	80.55	2.5	12000	51	12.0 (1.2)	30.0 (3.0)	1.5	26.7	1.051	38
1/256.00	1.177	12	166.65	2.0	12000	41	13.0 (1.3)	50.0 (5.0)	1.5	30.9	1.217	45
1/384.00	1.177	12	166.65	2.0	12000	41	13.0 (1.3)	50.0 (5.0)	1.5	30.9	1.217	45
1/576.00	1.177	12	166.65	2.0	12000	41	13.0 (1.3)	50.0 (5.0)	1.5	30.9	1.217	45
1/864.00	1.177	12	166.65	1.5	12000	41	13.0 (1.3)	50.0 (5.0)	1.5	30.9	1.217	45
1/1296.00	1.177	12	166.65	1.1	12000	41	13.0 (1.3)	50.0 (5.0)	1.5	30.9	1.217	45

SMP : φ25

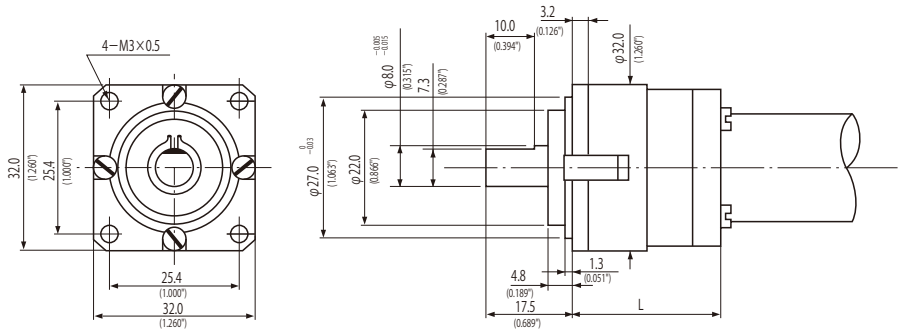


Unit : mm (in)

Specifications

Reduction Ratio	Allowable Output Torque			Allowable Output	Maximum Speed	Efficiency	Allowable Radial Load	Allowable Thrust Load	Backlash	Length		Weight
	Nm	kgf·cm	oz·in	W	rpm	%	N(kgf)	N(kgf)	deg	mm	inch	g
1/4.00	0.245	2.5	34.72	8.0	10000	85	35.0 (3.5)	30.0 (3.0)	1.5	25.3	0.996	63
1/6.00	0.245	2.5	34.72	8.0	10000	85	35.0 (3.5)	30.0 (3.0)	1.5	25.3	0.996	63
1/16.00	0.588	6	83.32	6.0	10000	72	40.0 (4.0)	50.0 (5.1)	1.5	29.7	1.169	75
1/24.00	0.588	6	83.32	6.0	10000	72	40.0 (4.0)	50.0 (5.1)	1.5	29.7	1.169	75
1/36.00	0.588	6	83.32	6.0	10000	72	40.0 (4.0)	50.0 (5.1)	1.5	29.7	1.169	75
1/64.00	1.177	12	166.65	5.0	10000	61	50.0 (5.1)	90.0 (9.1)	1.5	35.3	1.390	95
1/96.00	1.177	12	166.65	5.0	10000	61	50.0 (5.1)	90.0 (9.1)	1.5	35.3	1.390	95
1/144.00	1.177	12	166.65	5.0	10000	61	50.0 (5.1)	90.0 (9.1)	1.5	35.3	1.390	95
1/216.00	1.177	12	166.65	5.0	10000	61	50.0 (5.1)	90.0 (9.1)	1.5	35.3	1.390	95
1/256.00	2.942	30	416.62	4.0	10000	52	55.0 (5.6)	150.0 (15.3)	1.5	41.1	1.618	115
1/384.00	2.942	30	416.62	4.0	10000	52	55.0 (5.6)	150.0 (15.3)	1.5	41.1	1.618	115
1/576.00	2.942	30	416.62	4.0	10000	52	55.0 (5.6)	150.0 (15.3)	1.5	41.1	1.618	115
1/864.00	2.942	30	416.62	3.5	10000	52	55.0 (5.6)	150.0 (15.3)	1.5	41.1	1.618	115
1/1296.00	2.942	30	416.62	2.5	10000	52	55.0 (5.6)	150.0 (15.3)	1.5	41.1	1.618	115

SAP : φ32

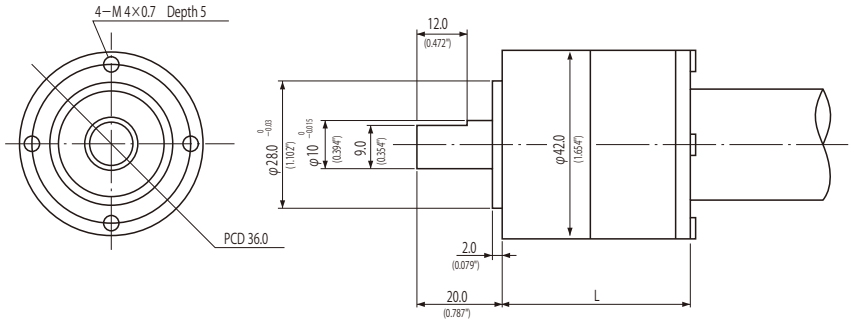


Unit : mm (in)

Specifications

Reduction Ratio	Allowable Output Torque			Allowable Output	Maximum Speed	Efficiency	Allowable Radial Load	Allowable Thrust Load	Backlash	Length		Weight
	Nm	kgf·cm	oz·in	W	rpm	%	N(kgf)	N(kgf)	deg	mm	inch	g
1/4.00	0.392	4	55.55	13.0	10000	85	50.0 (5.1)	40.0 (4.0)	1.5	24.8	0.976	110
1/6.00	0.392	4	55.55	13.0	10000	85	50.0 (5.1)	40.0 (4.0)	1.5	24.8	0.976	110
1/16.00	0.981	10	138.87	10.0	10000	72	55.0 (5.6)	70.0 (7.1)	1.5	28.9	1.138	130
1/24.00	0.981	10	138.87	10.0	10000	72	55.0 (5.6)	70.0 (7.1)	1.5	28.9	1.138	130
1/36.00	0.981	10	138.87	10.0	10000	72	55.0 (5.6)	70.0 (7.1)	1.5	28.9	1.138	130
1/64.00	1.961	20	277.74	8.0	10000	61	65.0 (6.6)	120.0 (12.2)	1.5	34.5	1.358	160
1/96.00	1.961	20	277.74	8.0	10000	61	65.0 (6.6)	120.0 (12.2)	1.5	34.5	1.358	160
1/144.00	1.961	20	277.74	8.0	10000	61	65.0 (6.6)	120.0 (12.2)	1.5	34.5	1.358	160
1/216.00	1.961	20	277.74	8.0	10000	61	65.0 (6.6)	120.0 (12.2)	1.5	34.5	1.358	160
1/256.00	4.707	48	666.59	6.5	10000	52	75.0 (7.6)	200.0 (20.4)	1.5	40.5	1.594	190
1/384.00	4.707	48	666.59	6.5	10000	52	75.0 (7.6)	200.0 (20.4)	1.5	40.5	1.594	190
1/576.00	4.707	48	666.59	6.5	10000	52	75.0 (7.6)	200.0 (20.4)	1.5	40.5	1.594	190
1/864.00	4.707	48	666.59	5.5	10000	52	75.0 (7.6)	200.0 (20.4)	1.5	40.5	1.594	190
1/1296.00	4.707	48	666.59	4.0	10000	52	75.0 (7.6)	200.0 (20.4)	1.5	40.5	1.594	190

SFP : φ42

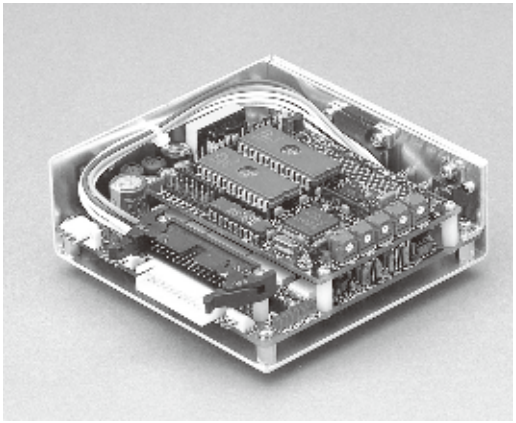


Unit : mm (in)

Specifications

Reduction Ratio	Allowable Output Torque			Allowable Output	Maximum Speed	Efficiency	Allowable Radial Load	Allowable Thrust Load	Backlash	Length		Weight
	Nm	kgf·cm	oz·in	W	rpm	%	N(kgf)	N(kgf)	deg	mm	inch	g
1/5.43	1.471	15	208.31	16.0	7000	90	100.0 (10.2)	60.0 (6.1)	1.5	36.5	1.437	190
1/20.73	2.942	30	416.62	14.5	7000	81	120.0 (12.2)	120.0 (12.2)	1.5	43.8	1.724	230
1/29.47	2.942	30	416.62	14.5	7000	81	120.0 (12.2)	120.0 (12.2)	1.5	43.8	1.724	230
1/79.24	5.884	60	833.23	13.0	7000	73	150.0 (15.3)	200.0 (20.4)	1.5	53.5	2.106	290
1/112.52	5.884	60	833.23	13.0	7000	73	150.0 (15.3)	200.0 (20.4)	1.5	53.5	2.106	290
1/160.00	5.884	60	833.23	13.0	7000	73	150.0 (15.3)	200.0 (20.4)	1.5	53.5	2.106	290
1/302.15	9.807	100	1388.72	12.0	7000	66	180.0 (18.3)	300.0 (30.6)	1.5	63.8	2.512	350
1/429.62	9.807	100	1388.72	12.0	7000	66	180.0 (18.3)	300.0 (30.6)	1.5	63.8	2.512	350
1/610.82	9.807	100	1388.72	11.5	7000	66	180.0 (18.3)	300.0 (30.6)	1.5	63.8	2.512	350
1/868.44	9.807	100	1388.72	8.0	7000	66	180.0 (18.3)	300.0 (30.6)	1.5	63.8	2.512	350

Driver for AC Servomotors (EA Series)

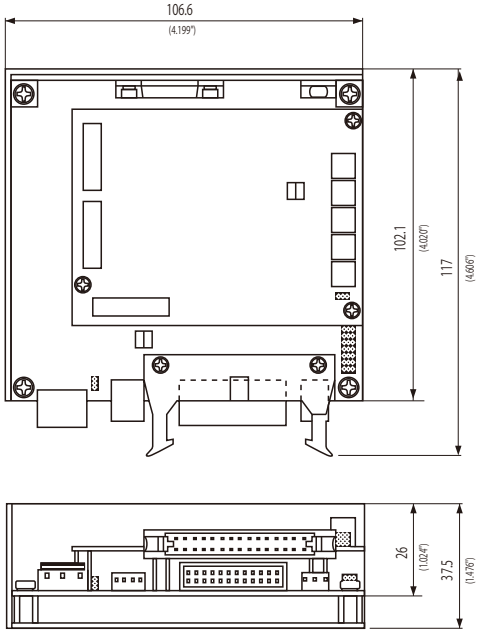


EAD-18C for Open Collector
EAD-18D for Line Driver

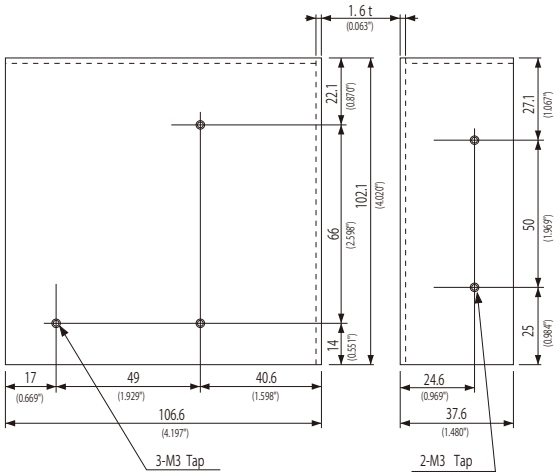
Features

- This is a 3-phases sine wave PWM driver
- This is a driver exclusive for Citizen Chiba Precision's Miniaturized AC Servomotor
- It is downsized by adopting digital servo control which uses ASIC and CPU
- DC24V single power supply (Built-in control battery)

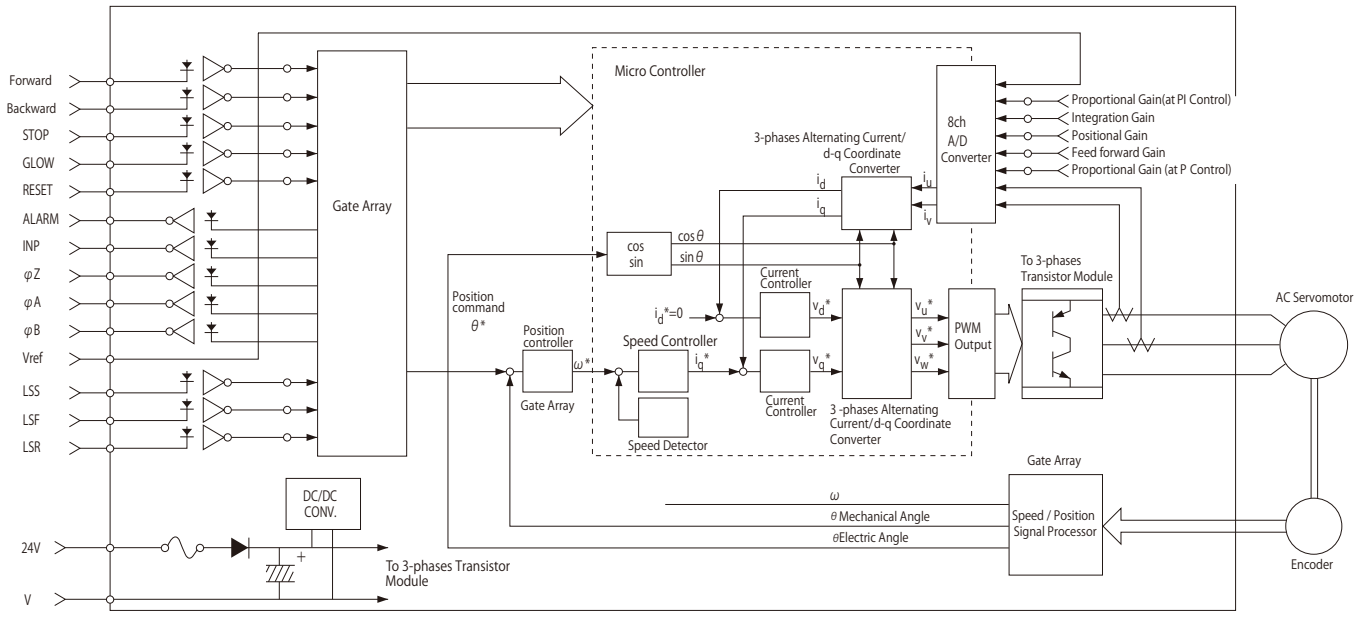
Dimensional Drawing (Unit: mm & inch)



Mouting Dimension (Unit: mm & inch)



Circuit Drawing



Specifications

The last 3 digits, 012, of the model number is for EA-17 / EA-21 Series, and 030 is for EA-25 / EA-30 Series

Specifications

Model	EAD-18C(D)-012	EAD-18C(D)-030
Input Power Supply	DC24V	
Continuous Rated Output Current	1.2Arms	3.0Arms
Maximum Rated Output Current	2.1Arms	10.0Arms
Driving System	3-Phases Sine Wave PWM	
Control System	Position Control / Speed Control / Torque Control ※Jumper Circuit Setup	
Encoder	Open Collector or Line Driver *1	
Encoder Input	φA、φB、φZ	
Hall Sensor	φU、φV、φW (Hall IC)　*Line Driver Input is possible *1	
Limit Sensor	CW Prohibited / CCW Prohibited	
Operating Temperature/ Humidity	0～40℃ / Below 85% RH without condensation	
Storage Temperature	−20～60℃ / Below 85% RH without condensation	
Outside Dimension	117×106×37(Maximum dimension including connector)	
Structure	Open Frame	
Accessories	Connectors for Input / Output	

*1 Another circuit board is required for line driver (Mountomg on the driver)

Specifications at Position Control Mode

Maximum Input Frequency	600kHz　※2
Positioning Accuracy	±1 pulse by encoder resolution
Multiplication Function of Encoder	×1, ×2, ×4 multiplication function
Command Multiplication Function	×1, ×2,×4 multiplication function (However, 4-multiplication is valid only for 2-phase input.)
φZ Output Logic	φZ Output Logic can be changed

*2 Input frequency is determined bynumber of pulses of encoder and rated speed of motor

Specifications at Speed Control Mode

Command Input Voltage	0～±10V (rated speed at 10V)　*CW direction when viewed from the output shaft at positive voltage
Command Input Impedance	10kΩ
Speed Control Range	1：1000

Specifications at Torque Control Mode

Command Input Voltage	0～±10V (Maximum current at 10V)　*CW direction when viewed from the output shaft at positive voltage	
Maximum Current	2.1Arms	10.0Arms
Command Input Impedance	100kΩ	

Option

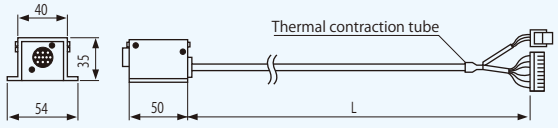
If the distance between the motor and the driver is required, a line driver cable which improves noise immunity is available.

Note : Please select the line driver type for the driver side also. If you need to change from the Open Collector Type to the Line Driver Type, please contact us and return it. The change will be arranged at the customer's expense.

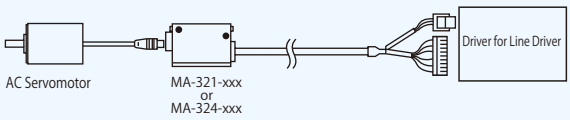
●Extension Cable with Line Driver (Driver Direct Connection Type)

● For EAD -18D - 012
MA-321-030 (L=3m)
MA-321-050 (L=5m)
MA-321-100 (L=10m)

● For EAD -18D - 030
MA-324-030 (L=3m)
MA-324-050 (L=5m)
MA-324-100 (L=10m)



■ Reference Drawing of Combination



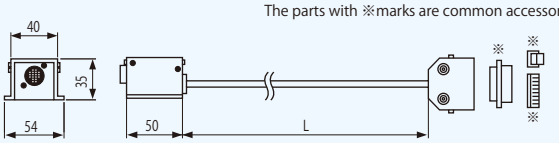
●Extension Cable with Line Driver (Driver Indirect Connection Type)

(It is used when the driver is used by putting it in a case. It cannot be directly connected to the driver.)

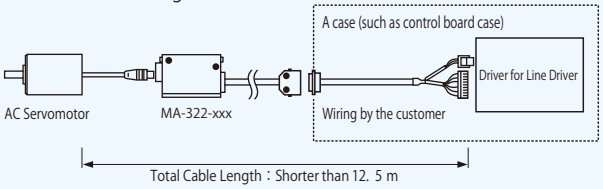
● For EAD -18D - 012
MA-322-030 (L=3m)
MA-322-050 (L=5m)
MA-322-100 (L=10m)

● For EAD -18D - 030
MA-3210-030 (L=3m)
MA-3210-050 (L=5m)
MA-3210-100 (L=10m)

The parts with ※marks are common accessories.



■ Reference Drawing of Combination



⚠ Cautions for Handling

Motor, Gearhead, Encoder, Driver, and accessories are precision-machined products and it is assumed that all the cautions and warnings listed below are correctly understood and handled.

Please do not install, operate, maintain or inspect the product until you have a full knowledge on the product, safety information and cautions.

The cautions required for safety are as follows.

【Caution when Unpacking】

● When you received the product, please check the package for damage and if it is the product you ordered.

【Cautions for Handling】

1. Be sure to check the wiring before turning on the power. Failure to follow this caution may result in mechanical damage and/or operation error.
2. The cables or lead wires should not be damaged, stressed excessively, loaded heavily, or pinched. Failure to follow this causion may result in malfuncition and/or the products would not operate correctly.
3. Since they are small precision products, there are many parts where strength is secured by adhesion. Please handle with care such as do not apply impact or stress to the joints of the gear and encoder. Failure to follow this caution may result in injury and/or malfunction.
4. Please do not apply impact or radial load to the shaft. Also please do not apply thrust load that exceeds the specified value. Failure to follow this caution may result in malfunction.
5. Hall sensor and encoder include semiconductor components. Please process the lead wire in an anti-static environment.
6. When installing the product, please use the specified number of screws by the torque specified in JIS. Please select the screws according to the dimensions shown in the external layout drawings. Failure to follow this caution, such as screws are too long or fixing torque excessive, may result in a malfunction for mechanical parts inside may be deformed or destroyed.
7. Please do not use or store the product in an environment subject to corrosive gas or any other hazardous gas. Also, please keep dust, water or oil out of the product.
8. If smoke, abnormal heat generation, strange odor, abnormal noise, abnormal vibration, etc. occur, please stop operating immediately and turn off the power.

【Product Warranty】

1. Duration of this warranty is one year from the date of delivery. If the customer discovered a defect in material and workmanship within this period, we will repair the product for free only if the customer carry it in or return it to our company address by customer's expense.
   Please note that it would take several days to repair.
2. For the defect caused by "misuse" or "mishandling" by any party, or the defect caused later than one year from the date of delivery, the customer is responsible for repairing charges. We will repair the product only if the customer carry it in to our company address or the customer is responsible to all shipping charges.
3. We are not liable to the damages caused while in transit. Please pack the product with sufficient cushioning materials to prevent external vibration.

【Other】

● Information listed above is subject to change without notice.
For further information, please contact our sales representatives or our authorized distributors.

Memo

Memo

Memo

■ Product Lineup


Coreless DC motors


Brushless motors


AC servomotors


Linear actuators


Galvanometer optical scanners


Gearheads


Tachometer Generator/ Encoder

■ Application for Solution

● Please visit our website for more details.

https://ccj.citizen.co.jp/en/case

■ Semiconductor Equipment :
Lithography Machine / Wafer Inspection System / Turbo Molecular Pumps / Wafer Dicing Machine / Conveyance System for Semiconductor Factories

■ Medical and Clinical Equipment :
Denture Processing Machine / Down Flow Masks for Virus Protection / OCT / Ultrasonic Diagnostic System / Lens Edger / Cancer Treatment / Autoclavable Medical Equipment / Robotic Exoskeleton

■ Beauty and Cosmetic Equipment :
Handpieces for Nail Art

■ Measuring and Analyzing Equipment :
LiDAR / Electron Microscope / Confocal Microscope / Railway Track Measuring Device / Surface Roughness Tester

■ Factory Automation and Robots :
Laser Marking Machine / Motors for Robots / Grinding Machine / Optical Disk Equipment

* Technical data and products are subject to change without prior notice. For further information, please contact our sales representatives or authorized distributors.

CITIZEN

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2021.04