

超小型交流伺服电机

Miniaturized AC Servomotors



<http://www.citizen-cpc.jp/>

挑战最高精度

Challenge to Highest Precision

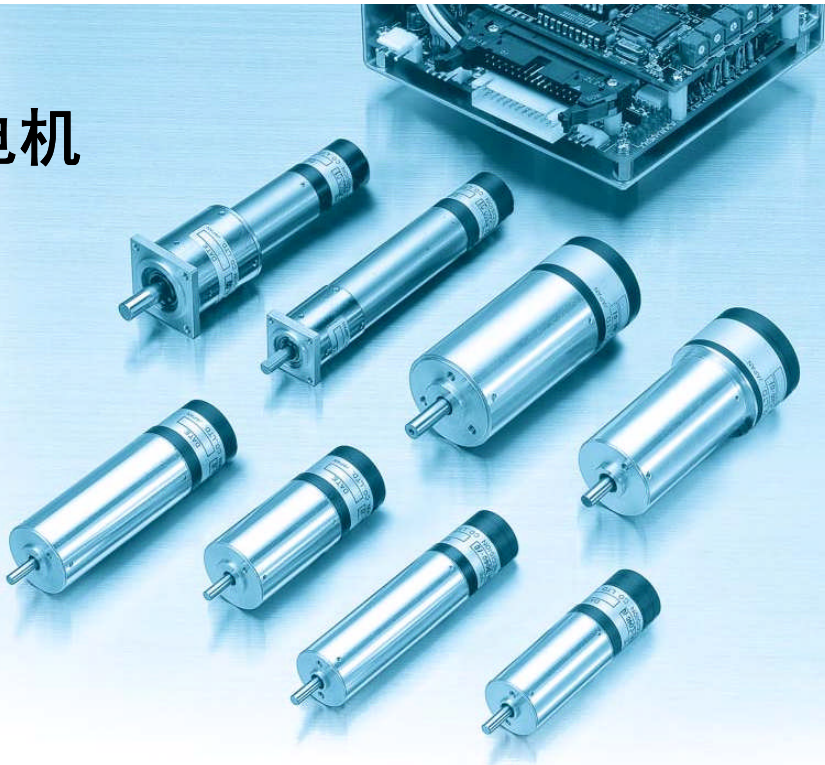
シチズン千葉精密株式会社
CITIZEN CHIBA PRECISION CO., LTD.

上海奥茵绅机电科技有限公司
SHANGHAI A.I.S MACHINERY ELECTRIC CO., LTD.

超小型交流伺服电机

AC Servomotors

- Ultra Compact
- High Resolution
- High Power



■ 简介

- 通过采用钕铁硼磁铁, 实现了高响应速度和高功率密度.
- 通过平衡转子, 使电机运行性稳, 无振动.
- 采用无槽结构绕线, 使低速时也能平衡运行.
- 采用高分辨率, 小型编码器, 实现了超小型, 高精度定位.
- 采用无刷结构设计, 寿命更长.
- 如有要求, 电机和驱动器间电缆可延长至10米. (长线驱动类型)

■ Special Feature

- High response and high power are attained by adapting NdFeB magnet.
- Mechanical vibration is reduced by balancing the rotor.
- The slotless structure of wire winding ensures the smooth rotation.
- High resolution small encoder achieves ultra high positioning.
- Brushless structure ensures long life.
- Cable between motor and driver is extendible up to 10 m. (Line Driver Type)

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■ 简介

General Information

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| ● 基本特性 | Basic Characteristics | | P. 2 |
| ● 定货型号参考 | Reference to Model No. | | P. 2 |

■ EA Series

| | | | |
|----------------|----------------|-------|------|
| ● EA-17 series | EA-1754 • 1771 | | P. 3 |
| ● EA-21 series | EA-2151 • 2169 | | P. 4 |
| ● EA-25 series | EA-2565 • 2580 | | P. 5 |
| ● EA-30 series | EA-3070 • 3087 | | P. 6 |

■ 行星减速器

Planetary Gearhead

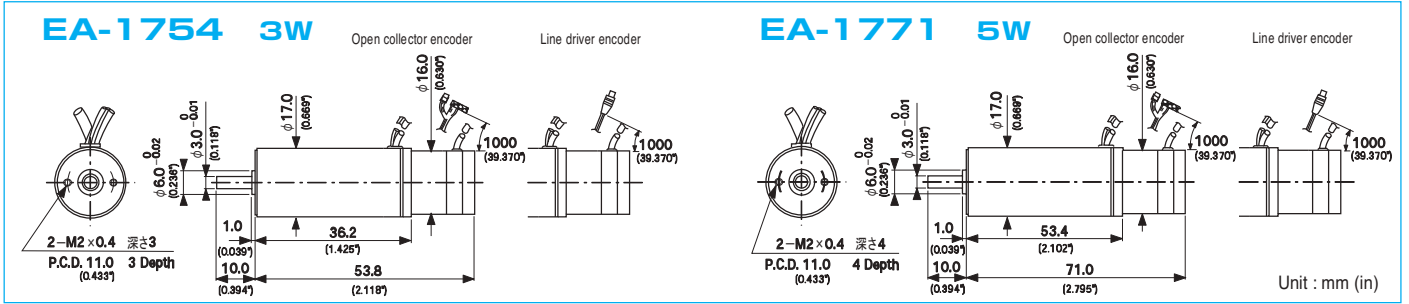
| | | |
|---------------------------|-------|------|
| ● SJP series • SMP series | | P. 7 |
| ● SAP series • SFP series | | P. 8 |

■ 驱动器

Driver

| | | |
|-----------------|-------|-------------|
| ● EAD-08 series | | P. 9 ~ P.10 |
|-----------------|-------|-------------|

交流伺服电机 EA-17系列
AC Servomotors
EA-17 Series



- 请参考P. 9. 编码器规格。
- 当要求电机和驱动器间使用长电缆时，请使用长引线驱动编码器类型。（参照P. 10.）
- Please refer to P.9 for driver specifications.
- Line driver encoder is recommendable if you require long transmission distance between motor and driver. (Please refer to P.10)

电机参数

Motor Specifications

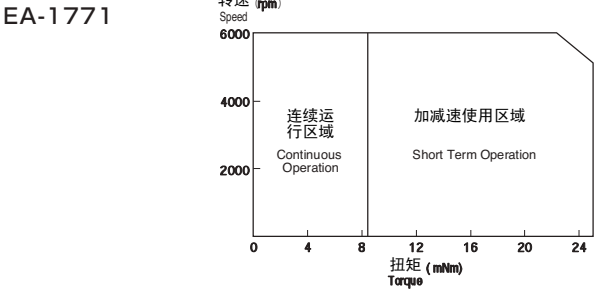
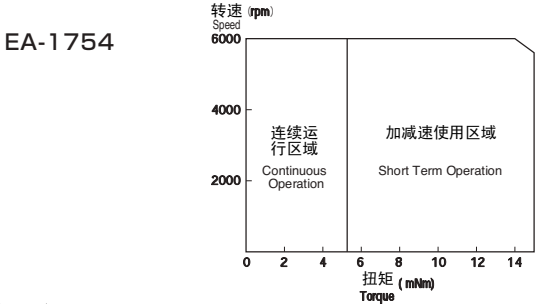
| | | | | EA-1754 | | | EA-1771 | | | |
|-------------|---|------------|-------|---------|---------------------------------------|----|---------|-------------------------------|----|------|
| 额 定 输 出 | Rated Output | W | | | 3.0 | | | 5.0 | | |
| 额 定 扭 矩 | Rated Torque | mNm | gf·cm | oz·in | 4.90 | 50 | 0.69 | 8.14 | 83 | 1.15 |
| 额 定 转 速 | Rated Speed | rpm | | | 6000 | | | | | |
| 瞬 间 最 大 扭 矩 | Instantaneous Max. Torque | mNm(gf·cm) | | | 14.7 (150) | | | 24.5 (250) | | |
| 功 率 率 比 | Power Rate | w/s | | | 220 | | | 330 | | |
| 扭 矩 常 数 | Torque Constant | mNm/A | | | 16.2 | | | 23.9 | | |
| 电 动 势 常 数 | EMF Constant | V/krpm | | | 1.7 | | | 2.5 | | |
| 磁 极 数 | Poles | — | | | 2 | | | 2 | | |
| 转 动 惯 量 | Rotor Inertia (GD²/4) | g·cm² | | | 1.1 | | | 2.0 | | |
| 绝 缘 等 级 | Winding Insulation | — | | | Class F | | | | | |
| 编 码 器 类 型 | Encoder | P/R | | | インクリメンタルフォト Incremental Photo Encoder | | | 400 or 1000 | | |
| 工 作 环 境 | Operating Ambient Temperature/ Humidity | — | | | 0 ~ 40℃、85%RH | | | Below 85% RH without bedewing | | |
| 储 存 环 境 | Storage Temperature/ Humidity | — | | | - 20 ~ 60℃、85%RH | | | Below 85% RH without bedewing | | |
| 重 量 | Weight | g | | | 80 | | | 105 | | |

The above values are representative specifications when an aluminum heat-sink (57×57×5t) is attached at the motor flange.

基本特性(直流24V时)

Basic Characteristics (at DC 24V)

- 对应驱动器 EAD-08C(D)-012 Drivers for these models EAD-08C(D)-012



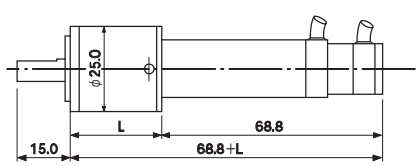
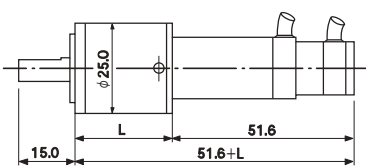
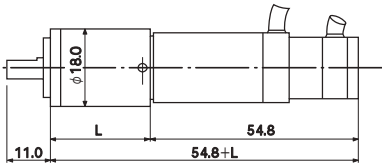
组合示例

Example of Combination

减速机+电机+编码器 Gearhead + Motor + Encoder
EA - 1754G SJP 1 / xxx

减速机+电机+编码器 Gearhead + Motor + Encoder
EA - 1754G SMP 1 / xxx

减速机+电机+编码器 Gearhead + Motor + Encoder
EA - 1771G SMP 1 / xxx



Please refer to P.7 for attachment and shape of shaft.

配置减速机的电机的额定参数

Rated Specifications of Geared Motors

- EA - 1754G SJP 1 / xxx

| SJP | 减速比 | Reduction Ratio | | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 | 256 | 384 | 576 | ※ 864 | ※ 1296 |
|-----|------|-----------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | 额定扭矩 | 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 |
| | 额定转速 | 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 |
| | 长度 | Length | mm | 19.9 | 19.9 | 22.9 | 22.9 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 |

- EA - 1754G SMP 1 / xxx

| SMP | 减速比 | Reduction Ratio | | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 | 256 | 384 | 576 | 864 | ※ 1296 |
|-----|------|-----------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | 额定扭矩 | 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 |
| | 额定转速 | 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 |
| | 长度 | Length | mm | 25.3 | 25.3 | 29.7 | 29.7 | 35.3 | 35.3 | 35.3 | 35.3 | 35.3 | 41.1 | 41.1 | 41.1 | 41.1 | 41.1 |

- EA - 1771G SMP 1 / xxx

| SMP | 减速比 | Reduction Ratio | | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 | 256 | 384 | 576 | ※ 864 | ※ 1296 |
|-----|------|-----------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | 额定扭矩 | 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 |
| | 额定转速 | 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 |
| | 长度 | Length | mm | 25.3 | 25.3 | 29.7 | 29.7 | 35.3 | 35.3 | 35.3 | 35.3 | 35.3 | 41.1 | 41.1 | 41.1 | 41.1 | 41.1 |

注1 选择时请不要超出额定扭矩。
注2 以上数值为带恒定负载时的值。

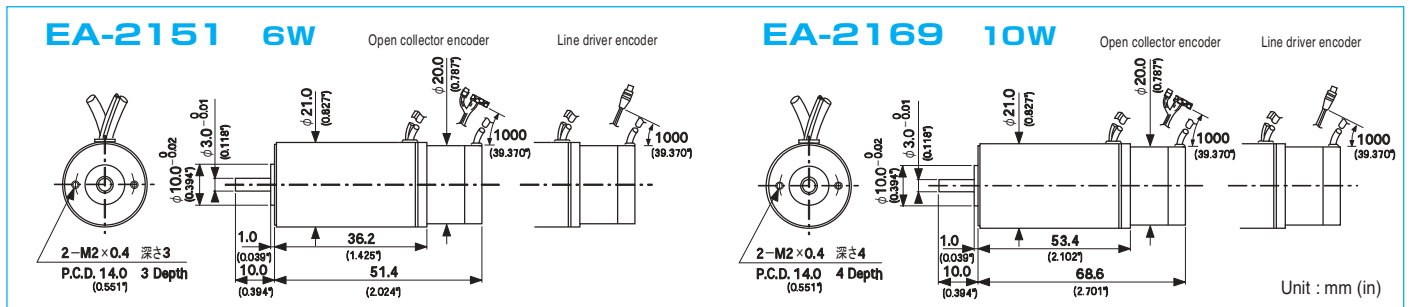
*1 : Please do not exceed the permissible torque.
*2 : The above values are attained at smooth load.

交流伺服电机 EA-21系列

AC Servomotors

EA-21 Series

シチズン千葉精密株式会社
CITIZEN CHIBA PRECISION CO., LTD.



- 请参照P. 9. 编码器规格.
- 当要求电机和驱动器间使用长电缆时, 请使用长线驱动编码器类型. (参照P. 10.)

- Please refer to P.9 for driver specifications.
- Line driver encoder is recommendable if you require long transmission distance between motor and driver. (Please refer to P.10)

电机参数

Motor Specifications

| | | | | | | | EA-2151 | | | EA-2169 | | |
|-------------|---|------------|-------|-------|---------------------------------------|-----|---------|-------------------------------|-----|---------|--|--|
| 额 定 输 出 | Rated Output | W | | | 6.0 | | | 10.0 | | | | |
| 额 定 扭 矩 | Rated Torque | mNm | gf-cm | oz-in | 9.81 | 100 | 1.39 | 16.38 | 167 | 2.32 | | |
| 额 定 转 速 | Rated Speed | rpm | | | 6000 | | | | | | | |
| 瞬 间 最 大 扭 矩 | Instantaneous Max. Torque | mNm(gf-cm) | | | 23.5 (240) | | | 40.2 (410) | | | | |
| 功 率 率 比 | Power Rate | w/s | | | 245 | | | 400 | | | | |
| 扭 矩 常 数 | Torque Constant | mNm/A | | | 23.9 | | | 29.6 | | | | |
| 电 动 势 常 数 | EMF Constant | V/krpm | | | 2.5 | | | 3.1 | | | | |
| 磁 极 数 | Poles | — | | | 2 | | | 2 | | | | |
| 转 动 惯 量 | Rotor Inertia (GD²/4) | g-cm² | | | 3.9 | | | 6.7 | | | | |
| 绝 缘 等 级 | Winding Insulation | — | | | Class F | | | | | | | |
| 编 码 器 类 型 | Encoder | P/R | | | インクリメンタルフォト Incremental Photo Encoder | | | 500 or 1000 | | | | |
| 工 作 环 境 | Operating Ambient Temperature/ Humidity | — | | | 0 ~ 40℃, 85%RH以下 | | | Below 85% RH without bedewing | | | | |
| 储 存 环 境 | Storage Temperature/ Humidity | — | | | - 20 ~ 60℃, 85%RH以下 | | | Below 85% RH without bedewing | | | | |
| 重 量 | Weight | g | | | 125 | | | 165 | | | | |

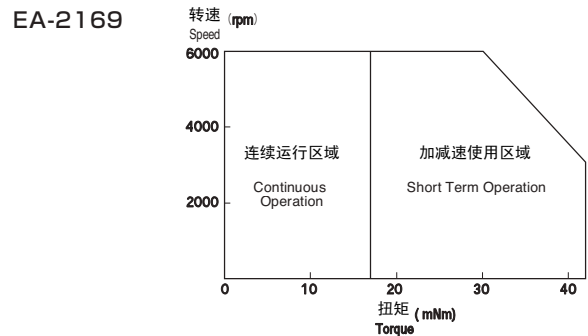
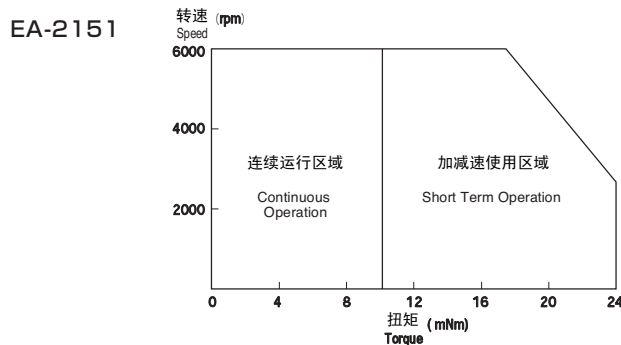
The above values are representative specifications when an aluminum heat-sink (57×57×5t) is attached at the motor flange.

基本特性(直流24V时)

Basic Characteristics (at DC 24V)

- 对应驱动器 EAD-08C(D)-012

Drivers for these models EAD-08C(D)-012

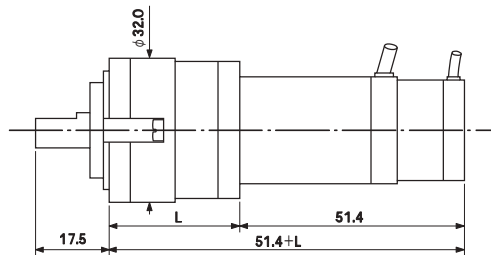


组合示例

Example of Combination

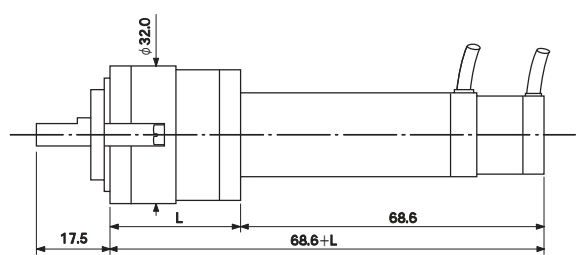
减速机+电机+编码器
EA-2151G SAP 1 / xxx

Gearhead + Motor + Encoder



减速机+电机+编码器
EA-2169G SAP 1 / xxx

Gearhead + Motor + Encode



Please refer to P.8 for attachment and shape of shaft.

配置减速机的电机的额定参数

Rated Specifications of Geared Motors

- EA-2151G SAP 1 / xxx

| SAP | 减速比 | Reduction Ratio | | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 | 256 | 384 | 576 | 864 | ※ 1296 |
|-----|------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | 额定扭矩 | 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 |
| | 额定转速 | 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 |
| | 长度 | 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 |

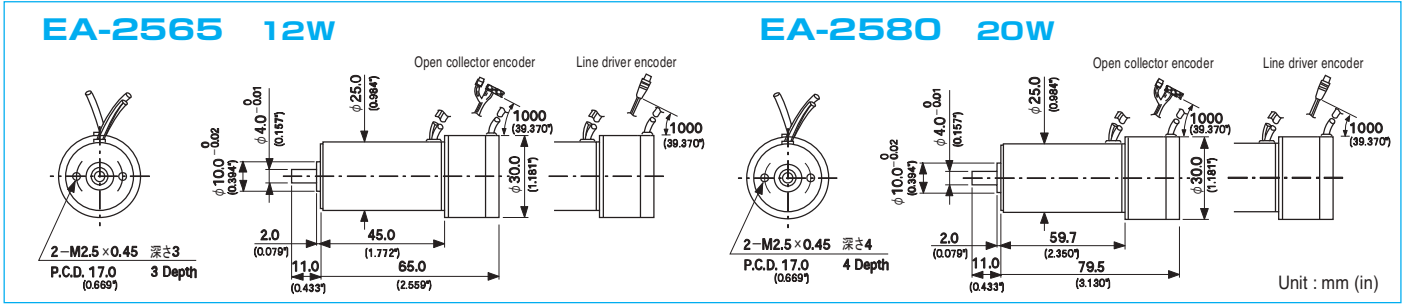
- EA-2169G SAP 1 / xxx

| SAP | 减速比 | Reduction Ratio | | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 | 256 | 384 | 576 | ※ 864 | ※ 1296 |
|-----|------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | 额定扭矩 | 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 |
| | 额定转速 | 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 |
| | 长度 | 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 |

注1 选择时请不要超出额定扭矩。
注2 以上数值为带恒定负载时的值。

*1 : Please do not exceed the permissible torque.
*2 : The above values are attained at smooth load.

交流伺服电机 EA-25系列
AC Servomotors
EA-25 Series



- 请参考P. 9. 编码器规格。
● 当要求电机和驱动器间使用长电缆时, 请使长线驱动编码器类型。(参照P. 10.)
- Please refer to P.9 for driver specifications.
● Line driver encoder is recommendable if you require long transmission distance between motor and driver. (Please refer to P.10)

电机参数

Motor Specifications

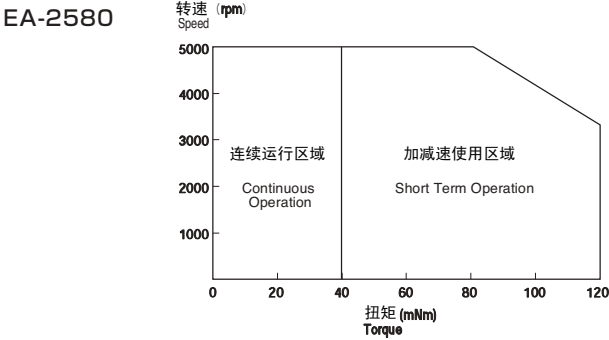
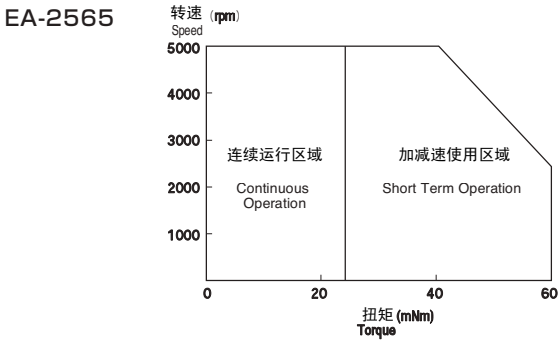
| | | | | | | | EA-2565 | | | EA-2580 | | |
|-------------|---|--|--|------------|-------|---------------------------------------|---------|-----|-------------------------------|---------|-----|------|
| 额 定 输 出 | Rated Output | | | W | | 12.0 | | | 20.0 | | | |
| 额 定 扭 矩 | Rated Torque | | | mNm | gf·cm | oz·in | 23.54 | 240 | 3.33 | 39.23 | 400 | 5.55 |
| 额 定 转 速 | Rated Speed | | | rpm | | 5000 | | | | | | |
| 瞬 间 最 大 扭 矩 | Instantaneous Max. Torque | | | mNm(gf·cm) | | 58.8 (600) | | | 117.6 (1200) | | | |
| 功 率 率 比 | Power Rate | | | w/s | | 740 | | | 1420 | | | |
| 扭 矩 常 数 | Torque Constant | | | mNm/A | | 26.7 | | | 30.6 | | | |
| 电 动 势 常 数 | EMF Constant | | | V/krpm | | 2.8 | | | 3.2 | | | |
| 磁 极 数 | Poles | | | — | | 2 | | | 2 | | | |
| 转 动 惯 量 | Rotor Inertia (GD²/4) | | | g·cm² | | 7.5 | | | 10.8 | | | |
| 绝 缘 等 级 | Winding Insulation | | | — | | Class F | | | | | | |
| 编 码 器 类 型 | Encoder | | | P/R | | インクリメンタルフォト Incremental Photo Encoder | | | 1000 or 2000 | | | |
| 工 作 环 境 | Operating Ambient Temperature/ Humidity | | | — | | 0 ~ 40℃、85%RH以下 | | | Below 85% RH without bedewing | | | |
| 储 存 环 境 | Storage Temperature/ Humidity | | | — | | - 20 ~ 60℃、85%RH以下 | | | Below 85% RH without bedewing | | | |
| 重 量 | Weight | | | g | | 230 | | | 270 | | | |

The above values are representative specifications when an aluminum heat-sink (57×57×5t) is attached at the motor flange.

基本特性 (直流24V时)

Basic Characteristics (at DC 24V)

- 对应驱动器 EAD-08C(D)-030 Drivers for these models EAD-08C(D)-030

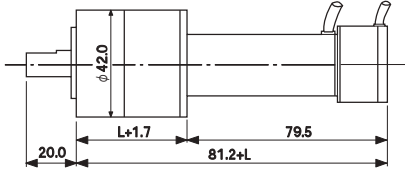
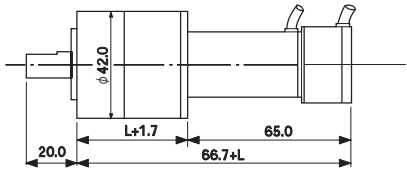


组合示例

Example of Combination

减速机+电机+编码器 Gearhead + Motor + Encoder
EA - 2565G SFP 1 / xxx

减速机+电机+编码器 Gearhead + Motor + Encoder
EA - 2580G SFP 1 / xxx



Please refer to P.8 for attachment and shape of shaft.

配置减速机的电机的额定参数

Rated Specifications of Geared Motors

- EA - 2565G SFP 1 / xxx

| | | | | | | | | | | | | | |
|-----|------|-----------------|-------|-------|-------|-------|--------|--------|--------|--------|--------|---------|---------|
| SFP | 减速比 | Reduction Ratio | | 5.43 | 20.73 | 29.47 | 79.24 | 112.52 | 160.00 | 302.15 | 429.63 | 610.82 | *868.44 |
| | 额定扭矩 | 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 |
| | 额定转速 | Rated Speed | rpm | 921 | 241 | 170 | 63.1 | 44.4 | 31.3 | 16.5 | 11.6 | 8.2 | 5.8 |
| | 长度 | 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

| | | | | | | | | | | | | | |
|-----|------|-----------------|-------|-------|-------|--------|--------|--------|--------|---------|---------|---------|---------|
| SFP | 减速比 | Reduction Ratio | | 5.43 | 20.73 | 29.47 | 79.24 | 112.52 | 160.00 | 302.15 | 429.63 | *610.82 | *868.44 |
| | 额定扭矩 | 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 |
| | 额定转速 | Rated Speed | rpm | 800 | 216 | 153 | 56.3 | 39.6 | 27.8 | 15.0 | 11.6 | 8.2 | 5.8 |
| | 长度 | Length | mm | 36.5 | 43.8 | 43.8 | 53.5 | 53.5 | 53.5 | 63.8 | 63.8 | 63.8 | 63.8 |

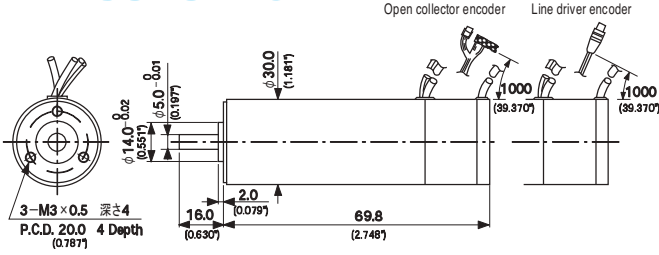
注1 选择时请不要超出额定扭矩。
注2 以上数值为带恒定负载时的值。

*1 : Please do not exceed the permissible torque.
*2 : The above values are attained at smooth load.

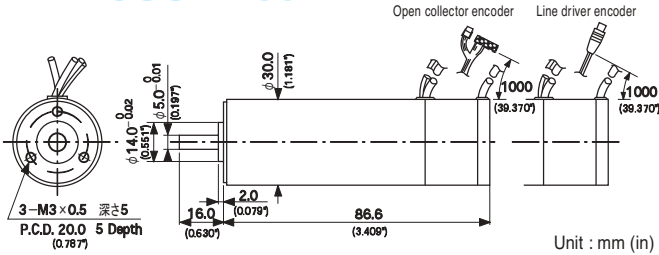
交流伺服电机 EA-30系列
AC Servomotors
EA-30 Series

シチズン千葉精密株式会社
CITIZEN CHIBA PRECISION CO., LTD.

EA-3070 20W



EA-3087 30W



Unit : mm (in)

- 请参照P. 9. 编码器规格。
- 当要求电机和驱动器间使用长电缆时, 请使用长线驱动编码器类型。(参照P. 10.)

- Please refer to P.9 for driver specifications.
- Line driver encoder is recommendable if you require long transmission distance between motor and driver. (Please refer to P.10)

电机参数

Motor Specifications

| | | | | EA-3070 | | | EA-3087 | | | |
|-------------|---|-------------------|-------|--|-------|-----|---------|-------------------------------|-----|------|
| 额 定 输 出 | Rated Output | W | | 20 | | | 30 | | | |
| 额 定 扭 矩 | Rated Torque | mNm | gf-cm | oz-in | 39.23 | 400 | 5.55 | 58.84 | 600 | 8.33 |
| 额 定 转 速 | Rated Speed | rpm | | 5000 | | | | | | |
| 瞬 间 最 大 扭 矩 | Instantaneous Max. Torque | mNm(gf-cm) | | 117.6 (1200) | | | | 176.4 (1800) | | |
| 功 率 比 | Power Rate | w/s | | 915 | | | | 1430 | | |
| 扭 矩 常 数 | Torque Constant | mNm/A | | 37.2 | | | | 39.2 | | |
| 电 动 势 常 数 | EMF Constant | V/krpm | | 3.9 | | | | 4.1 | | |
| 磁 极 数 | Poles | — | | 2 | | | | 2 | | |
| 转 动 惯 量 | Rotor Inertia (GD ² /4) | g-cm ² | | 16.8 | | | | 24.2 | | |
| 绝 缘 等 级 | Winding Insulation | — | | Class F | | | | | | |
| 编 码 器 类 型 | Encoder | P/R | | インクリメンタルフォト Incremental Photo Encoder 1000 or 2000 | | | | | | |
| 工 作 环 境 | Operating Ambient Temperature/ Humidity | — | | 0 ~ 40℃、85%RH以下 | | | | Below 85% RH without bedewing | | |
| 储 存 环 境 | Storage Temperature/ Humidity | — | | - 20 ~ 60℃、85%RH以下 | | | | Below 85% RH without bedewing | | |
| 重 量 | Weight | g | | 310 | | | | 350 | | |

The above values are representative specifications when an aluminum heat-sink (57×57×5t) is attached at the motor flange.

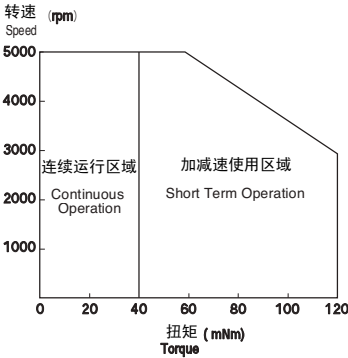
基本特性(直流24V时)

Basic Characteristics (at DC 24V)

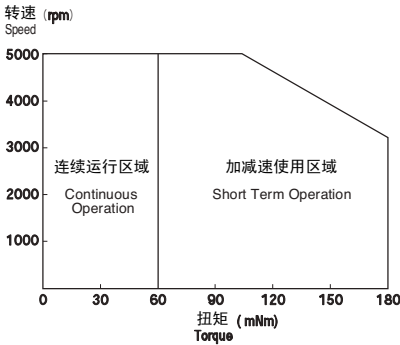
- 对应驱动器 EAD-08C(D)-030

Drivers for these models EAD-08C(D)-030

EA-3070

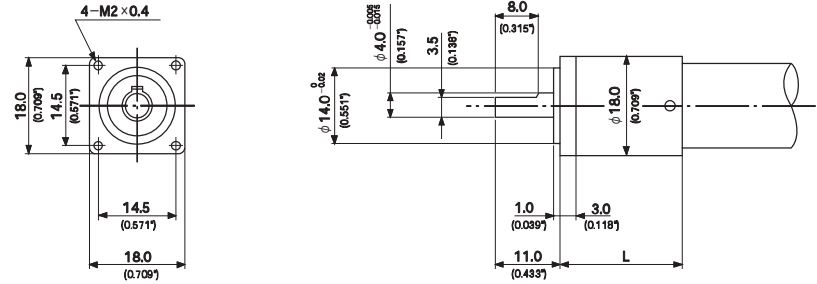


EA-3087



- ※ 适合EA-30系列的减速机暂不提供。
Gearhead for EA-30 series is not prepared.

SJP : $\phi 18$

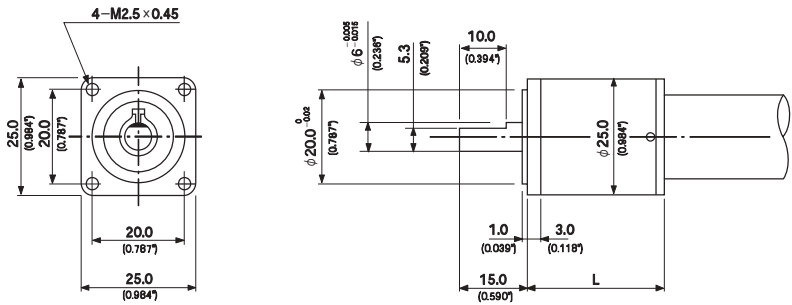


Unit : mm (in)

减速机参数 Gear Specifications

| 减速比 Reduction Ratio | 允许输出扭矩 Permissible Output Torque | | | 允许输出 Permissible Output | 最高转速 Max Speed | 效率 Efficiency | 允许径向负荷 Permissible Radial Load | 允许冲击负荷 Permissible Thrust Load | 背隙 Backlash | 长度 Length | | 重量 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 : $\phi 25$



Unit : mm (in)

减速机参数 Gear Specifications

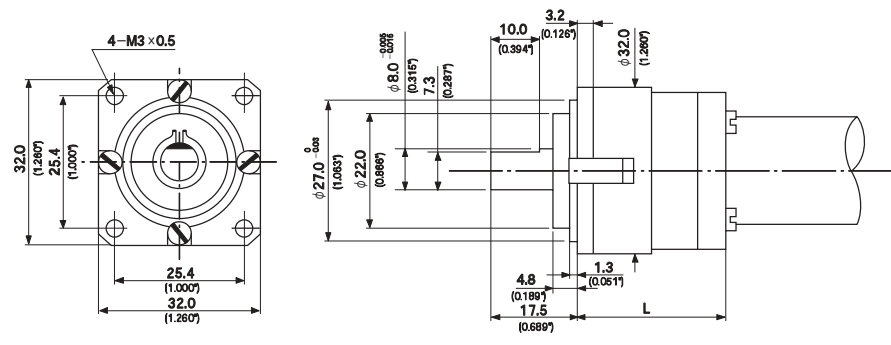
| 减速比 Reduction Ratio | 允许输出扭矩 Permissible Output Torque | | | 允许输出 Permissible Output | 最高转速 Max Speed | 效率 Efficiency | 允许径向负荷 Permissible Radial Load | 允许冲击负荷 Permissible Thrust Load | 背隙 Backlash | 长度 Length | | 重量 Weight |
|------------------------|-------------------------------------|--------|--------|----------------------------|-------------------|------------------|-----------------------------------|-----------------------------------|----------------|--------------|-------|--------------|
| | 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 |

行星减速机

Planetary Gearheads

シチズン千葉精密株式会社
CITIZEN CHIBA PRECISION CO., LTD.

SAP : $\phi 32$

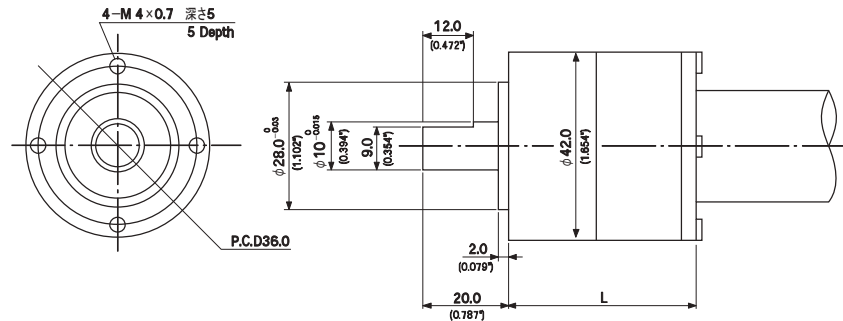


Unit : mm (in)

减速机参数 Gear Specifications

| 减速比 Reduction Ratio | 允许输出扭矩 Permissible Output Torque | | | 允许输出 Permissible Output | 最高转速 Max Speed | 效率 Efficiency | 允许径向负荷 Permissible Radial Load | 允许冲击负荷 Permissible Thrust Load | 背隙 Backlash | 长度 Length | | 重量 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 : $\phi 42$



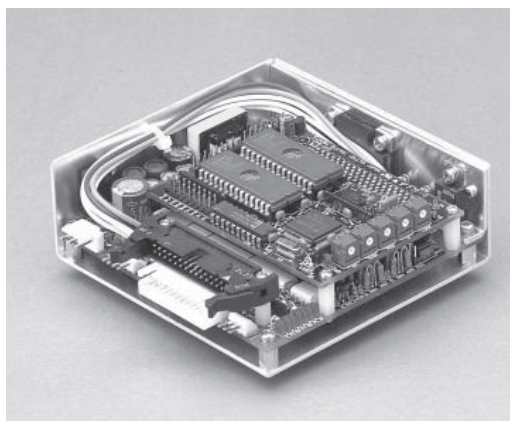
Unit : mm (in)

减速机参数 Gear Specifications

| 减速比 Reduction Ratio | 允许输出扭矩 Permissible Output Torque | | | 允许输出 Permissible Output | 最高转速 Max Speed | 效率 Efficiency | 允许径向负荷 Permissible Radial Load | 允许冲击负荷 Permissible Thrust Load | 背隙 Backlash | 长度 Length | | 重量 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 |

适用于交流伺服电机 (EA系列)

For AC Servomotors (EA series)



EAD-08C 适用于集电极开路编码器型使用
EAD-08D 适用于长线驱动编码器型使用

EAD-08C for Open Collector
EAD-08D for Line Driver

特点

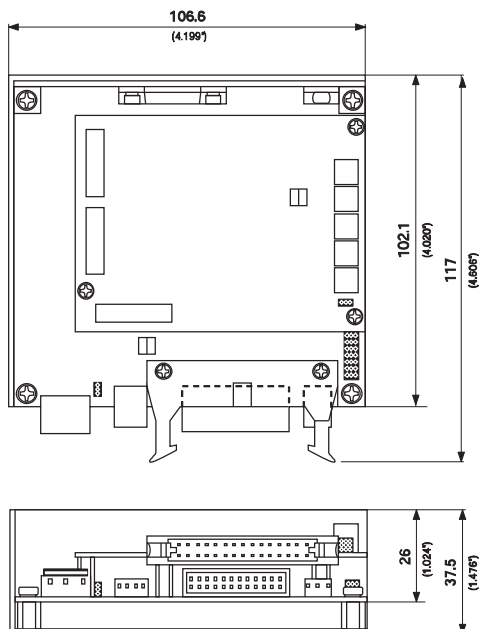
- 通过3相正弦PWM驱动。
- 本驱动是专为本系列超小型交流伺服电机设计开发的。
- 通过内置CPU和ASIC, 虽然体积小, 但实现了全数字式控制。
- 单独的DC24V电源供电。(内置电源控制)

Special Features

- Driver by 3-phase sine wave PWM.
- Driver specially designed for our ultra compact AC Servomotors.
- Compact size attained by the full digital servo control where ASIC and CPU are incorporated.
- DC 24V single power supply. (built-in power control)

外形尺寸 (单位: mm)

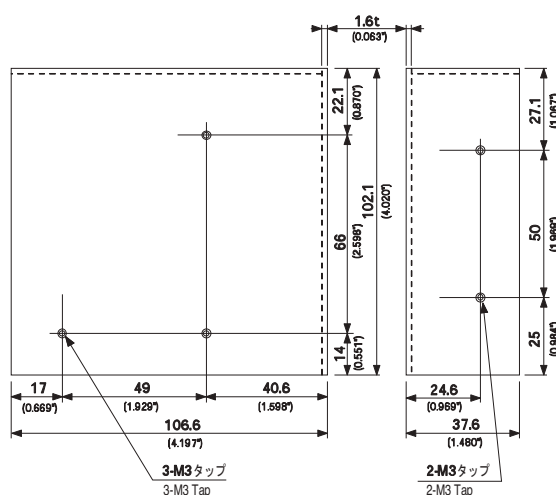
Outside Configuration (Unit: mm & inch)



安装尺寸

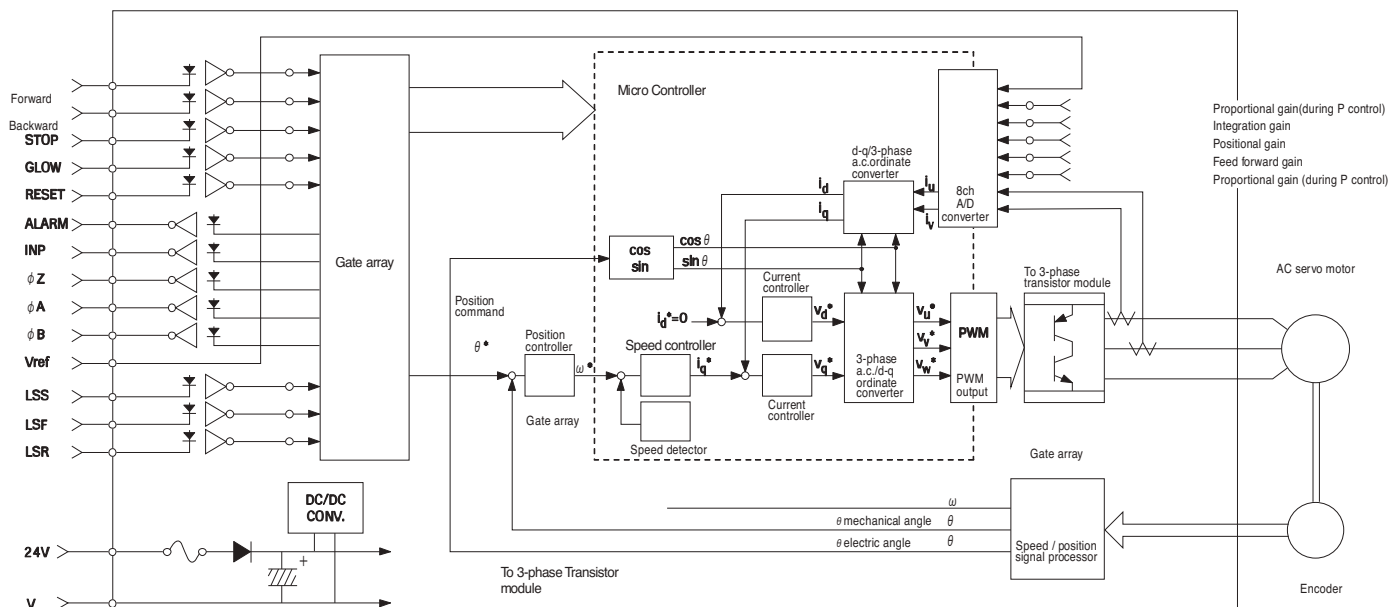
(单位: mm)

Install Dimension (Unit: mm & inch)



电路组成结构

Circuit Configuration



规格

基本参数

| | EAD-08C(D)-012 | EAD-08C(D)-030 |
|-------|---------------------------------|----------------|
| 输入电压 | DC24V | |
| 额定电流 | 1.2Arms | 3.0Arms |
| 最大电流 | 2.1Arms | 10.0Arms |
| 驱动系统 | 3相正弦PWM | |
| 控制系统 | 3种(位置控制/速度控制/扭矩控制) ※通过拨码开关设置 | |
| 编码器 | 集电极开路或长线驱动 | |
| 编码器输入 | φA、φB、φZ | |
| 霍尔传感器 | φU、φV、φW(霍尔芯片)※1 可使用长线驱动输入。 | |
| 限制传感器 | 顺时针方向禁止或逆时针方向禁止 | |
| 运行环境 | 0~40℃ 湿度低于85% 无结露 | |
| 储存环境 | -20~85℃ 湿度低于85% 无结露 | |
| 外形尺寸 | 117×106×37(包含插件的最大尺寸) | |
| 结构 | 开放式结构 | |
| 附件 | 输入/输出端子 | |

※ 1 如有要求时, 可提供长线驱动电路(内置于驱动器中)。

位置控制规格

| | |
|--------|---------------------------|
| 最大输入频率 | 600kHz ※2 |
| 定位精度 | 编码器分辨率的±1个脉冲 |
| 编码器倍频 | ×1、×2、×4倍频功能 |
| 倍频控制功能 | ×1、×2、×4倍频功能(×4只适用于2相输入时) |
| φZ输出逻辑 | φZ输出逻辑是不可改变的 |

※ 2 输入频率取决于编码器分辨率及电机转速。

速度控制规格

| | |
|--------|-------------------------------|
| 控制输入电压 | 0~±10V(10V时为额定转速) 正电压时顺时针方向旋转 |
| 控制输入电阻 | 10kΩ |
| 速度控制范围 | 1:1000 |

扭矩控制规格

| | |
|--------|-------------------------------|
| 控制输入电压 | 0~±10V(10V时为最大电流) 正电压时顺时针方向旋转 |
| 最大电流 | 2.1Arms 10.0Arms |
| 控制输入电阻 | 100kΩ |

Specification

General Information

| | EAD-08C(D)-012 | EAD-08C(D)-030 |
|---------------------------------|---|----------------|
| Input Power Supply | DC24V | |
| Continuous Rated Output Current | 1.2Arms | 3.0Arms |
| Max Rated Output Current | 2.1Arms | 10.0Arms |
| Driving System | 3-phase sine wave PWM | |
| Control System | 3-modes (position/ speed/ torque control) ※jumper circuit setup | |
| Encoder | Open Collector or Line Driver | |
| Encoder Input | φA、φB、φZ | |
| Hall Sensor | φU、φV、φW(Hall IC) ※1 line driver input is possible | |
| Limit Sensor | CW Prohibition, CCW Prohibition | |
| Operating Temperature/ Humidity | 0~40℃ Below 85% RH without bedewing | |
| Storage Temperature | -20~85℃ without bedewing | |
| Outside Dimension | 117×106×37(Max dimension including connector) | |
| Structure | Open frame structure | |
| Attachment | Connectors for input/ output | |

※ 1 Circuit board specific for line driver is required. (Installed in the driver)

Specifications at Position Control Mode

| | |
|------------------------------------|---|
| Input Max Frequency | 600kHz ※2 |
| Positioning Accuracy | ±1 pulse of encoder resolution |
| Multiplication Function of Encoder | ×1、×2、×4 multiplication function |
| Control Multiplication Function | ×1,×2,×4 multiplication function (×4 is applicable only by 2-phase input) |
| Logic of φZ Output | Logic of φZ output is unchangeable |

※ 2 Input frequency is determined by pulses of encoder and rated speed of motor.

Specifications at Speed Control Mode

| | |
|-------------------------|--|
| Control Input Voltage | 0~±10V (rated speed at 10V) CW at positive voltage |
| Control Input Impedance | 10kΩ |
| Scope of Control | 1:1000 |

Specifications at Torque Control Mode

| | |
|-------------------------|--|
| Control Input Voltage | 0~±10V (Max current at 10V) CW at positive voltage |
| Max Current | 2.1Arms 10.0Arms |
| Control Input Impedance | 100kΩ |

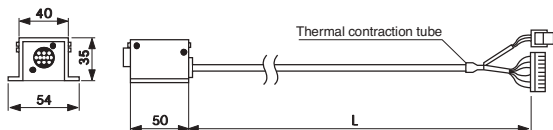
可选项

Option

当电机和驱动器间距离有确定要求时, 可提供长线驱动
器延长电缆以抑制噪声。

● 长线驱动延长电缆(直接连接型)

Extension cable with line driver (direct connection type)



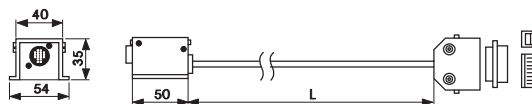
● EAD-08D-012 用

MA-321-030 (L=3m)
MA-321-050 (L=5m)
MA-321-100 (L=10m)

● EAD-08D-030 用

MA-324-030 (L=3m)
MA-324-050 (L=5m)
MA-324-100 (L=10m)注: 当使用长线驱动型驱动器时, 请选择EAD-08D长线驱动延长
电缆。
如需将集电极开路型替换成长线驱动型, 请与我们联系, 然
后将产品返厂。替换费用由贵方承担。Extension cable with line driver can be supplied for coping with
electrical noise, when a certain distance between motor and driver is
required.● 长线驱动延长电缆(此型适用于驱动器安装在控制盒中, 无法直
接连接时使用。)

Extension cable with line driver

(This is used when driver is inserted in the box. This cannot be directly
connected to the driver.)

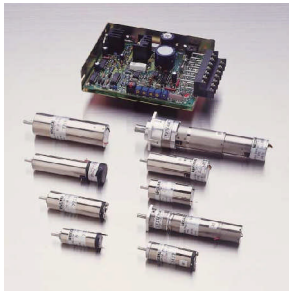
● EAD-08D-012、EAD-08D-030 共通

MA-322-030 (L=3m)
MA-322-050 (L=5m)
MA-322-100 (L=10m)note: Please select EAD-08D for extension cable with line driver.
Please contact us and then return the products when you request us to
change open collector type to line driver type. The change is arranged at
your expense.

行业应用

半导体设备: 步进光刻机, 切割设备, 涂装设备, 涡轮分子泵设备, 清洗设备, 模具焊接机, 检查设备(包括真空环境下的检测及高精度运动控制设备)等
光学及磁盘存储设备: 光盘初始器, 光盘检测系统, 光盘存储区域确认机构等
数码影像设备: 激光振荡器/多边形, 高端激光打印机, 图像采集及其它高性能纺织产品扫描仪等
医疗设备: 牙科高速微粉碎机, 超声波诊断, 人工心脏, X射线仪器和离心分离器
激光/光学设备: 激光打标, 激光扫描, 激光测量设备, 图像处理器, 光纤熔接机, 激光显微镜, 线路板焊接设备等
机床/FA及检测设备: 机器人, 促动器, 读卡器, PCB等高速钻孔机, 研磨机, 镜面抛光设备, 焊接机, 隐形眼镜起泡设备, 3-D检测设备, 高速绕线机等

Product Lineup



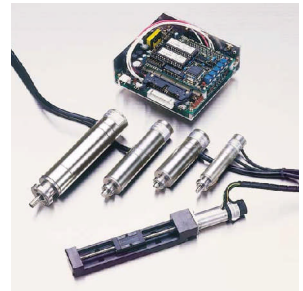
直流空心杯电机
Coreless DC Motor



无刷电机
Brushless Motor



交流伺服电机
AC Servomotor



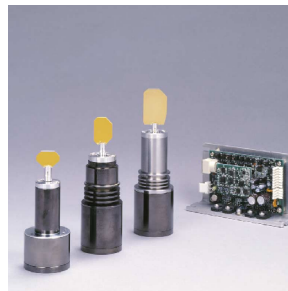
直线机构
Linear Actuator



编码器和测速发电机
Encoder & Tacho



主轴电机
Spindle Motor



基于检流器的光学扫描仪
Galvanometers Optical Scanner



减速机
Gearhead

Applications

Semiconductor Equipment: Stepper aligner, spincoater, dicing saw, turbo molecular pump, cleaning equipment, die bonder, equipment for test, inspection and high accuracy motion control including use in vacuum condition. **Optical and Magnetic Disk Storage Equipment:** Optical disk initializer, optical disk testing system, optical disk storage media certifiers. **Digital Imaging Equipment:** Laser scanner with mirror / polygons, high-end laser printer, image setter and other high performance spinning scanning products. **Medical Equipment:** High-speed dental micro grinder, ultrasonic diagnosis, artificial heart, X-ray instruments and centrifugal separator. **Laser and Optical Equipment:** Laser marker, laser scanner, optical measuring equipment, image processor, optical fiber splicing machine, laser microscope, optical connector equipment and electron microscope. **Machine Tools, FA and Inspection Equipment:** Robots, actuator, card-reader, high speed drilling machine, grinding machine, mirror polishing equipment, welding machine, contact lens lathers, 3-D measuring equipment and high speed winding machine.

详细资料请向我们或我们的代理商索取。

For further information, please contact us or our authorized agent at any time.

CITIZEN
Micro HumanTech

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