MOTOR

# Coreless Motor Co., Ltd

## MAIN

CORELESS MOTOR
GEAR MOTOR
BRUSHLESS MOTOR

工业级精密空心杯电机研发制造商

creative ideas for drive

# COMPANY PROFILE

Coreless Motor Co., Ltd. is located in Shenzhen, the core technological innovation capital of the Greater Bay Area of China. We have a strong research and development team and manufacturing capacity, with a professional coreless motor production line, through product customization and technical innovation, to help you create high-quality transmission system. Our micro transmission solutions are widely used in medical beauty, power tools, AI intelligent robots, electronic door locks, aviation and other fi elds, improving the level of accurate application of products.

Based on nearly 10 years of experience in the fi eld of coreless motor technology, we offer both brush coreless motors and brushless coreless motors with diameters ranging from 12 to 45MM, and provide with the matching DC brushless drive, speed reduction box and encoder for your choice. We provide you with accurate selection, through team work, design practical solutions; By customizing and adjusting the product parameters on demand, it can flexibly meet the power needs of various industrial automation application fi elds. We have passed the ISO9001:2015 quality management system certification, to ensure the consistency of the production process, delivery efficiency and traceable plasticity, to provide customers with durable, efficient, low maintenance rate of high quality motor products.

"Technology-based, innovation, and harmony." has been the development of the company's business philosophy, serving customers, committed to providing more scientifi c and reasonable solutions and products, and ultimately achieving "mutual benefi t and win-win".

# CONTENT



Tattoo
Tattoo beauty

Power tools
Manipulator
Electronic door lock

AI intelligent robot
Industrial automation

Aerospace
Medical equipment

# 公司简介

深圳市新和电机有限公司位于中国大湾区核心科技创新之都---深圳!我们拥有强大的研发团队和制造能力,拥有专业的空心杯电机生产线,通过产品定制化和技术革新,协助您创造出优质的传动系统。我们的微型传动解决方案广泛应用于医疗美容、电动工具、AI智能机器人、电子门锁、航空等领域,提高了产品精准应用的水平。

基于在空心杯电机技术领域近十年的经验,我们有刷空心电机和无刷空心杯电机直径从12到45MM都有推出,与之配套的直流无刷驱动器,减速箱和编码器都有完整的产品供应挑选。我们为您提供精准选型,通过团队合作,设计出实用的解决方案;通过订制化按需调整产品参数,灵活的满足各种工业自动化应用场的动力需求。我们通过ISO9001:2015质量管理体系认证,确保产品生产制程的一致性和出货效率及可追塑性,为客户提供耐用、高效、维修率极低的优质电机产品。

“科技为本,创新,和谐。”一直作为公司的发展经营理念,服务于客户,致力于提供更加科学、合理的方案和产品,最终达到“互利、共赢”。

# 目录



纹身
纹绣美容

电动工具
机械手
电子门锁

A1智能机器人
工业自动化

航天航空
医疗设备

MOTOR Coreless Motor Co Ltd

## CORELESS GEARMOTOR












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**Website:** www.coreless-motor.com

MOTOR Coreless Motor Co., Ltd

## CORELESS BRUSHLESS MOTOR












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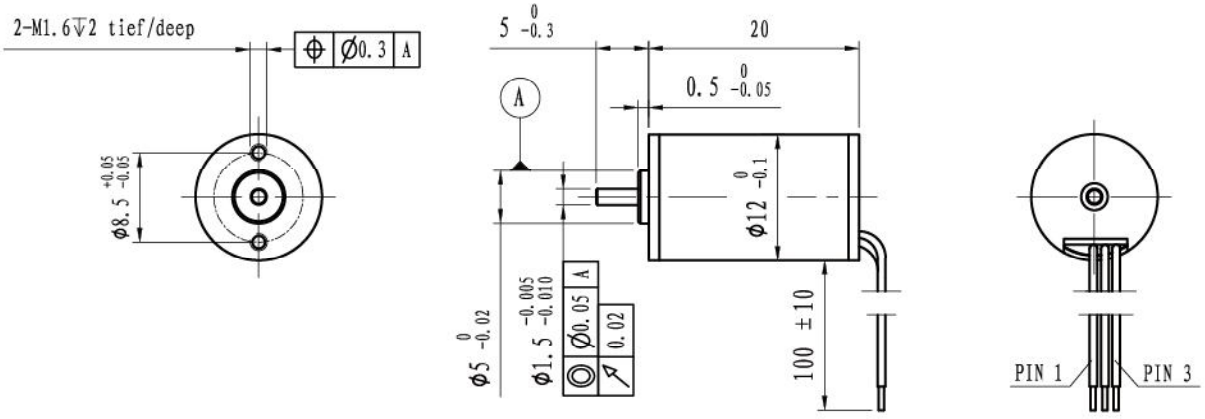
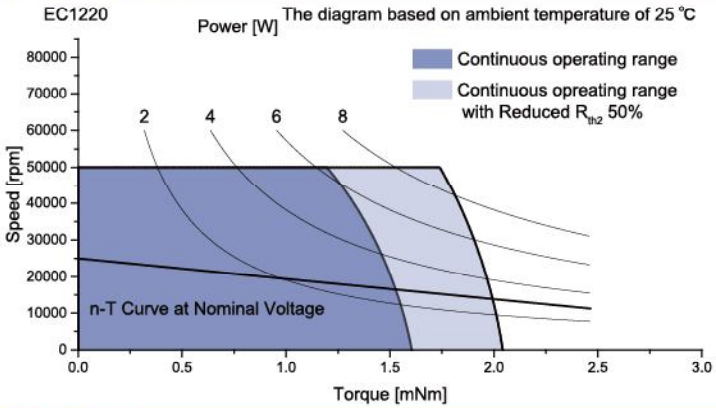
Whatsapp/WeChat/Mob: 8613713792667
**Website:** www.coreless-motor.com




M 1.5:1

| Sensorless EC1220L-... | | 0625 | 0936 |
|---|---|---|---|
| **Motor data** | | | |
| **Values at nominal voltage** | | | |
| 1 Nominal voltage | V | 6 | 9 |
| 2 No load speed | rpm | 25000 | 36890 |
| 3 No load current | mA | 69 | 83 |
| 4 Nominal speed | rpm | 16536 | 29888 |
| 5 Nominal torque | mNm | 1.5 | 1.3 |
| 6 Nominal current | A | 0.75 | 0.66 |
| 7 Stall torque | mNm | 4.43 | 6.85 |
| 8 Stall current | A | 2.07 | 3.1 |
| 9 Max. efficiency | % | 66.8 | 70 |
| 10 Terminal resistance | Ω | 2.9 | 2.9 |
| 11 Terminal inductance | mH | 0.19 | 0.19 |
| 12 Torque constant | mNm/A | 2.22 | 2.27 |
| 13 Speed constant | rpm/V | 4310 | 4212 |
| 14 Speed/torque gradient | rpm/mNm | 5642 | 5386 |
| 15 Mechanical time constant | ms | 10.0 | 9.6 |
| 16 Rotor inertia | gcm^2 | 0.17 | 0.17 |
| 17 Thermal resistance housing-ambient | 38.3 K/W | | |
| 18 Thermal resistance winding-housing | 9.6 K/W | | |
| 19 Thermal time constant winding | 5 s | | |
| 20 Thermal time constant motor | 196 s | | |
| 21 Ambient temprature | -30...+100℃ | | |
| 22 Max. permissible winding temperature | +125℃ | | |
| 23 Max. permissible speed | 50000 rpm | | |
| 24 Axial play at axial load <0.8 N | 0 mm | | |
| >0.8 N | max. 0.3 mm | | |
| 25 Radial play | preloaded | | |
| 26 Max. axial load (dynamic) | 0.3 | | |
| 27 Max.force for press fits (static) | 11N | | |
| (static, shaft supported) | 200 N | | |
| 28 Max. radial loading, 5mm from flange | 4.3 N | | |
| 29 Number of pole pairs | 1 | | |
| 30 Number of phases | 3 | | |
| 31 Weight of motor | 9.8 g | | |

## Operating Range



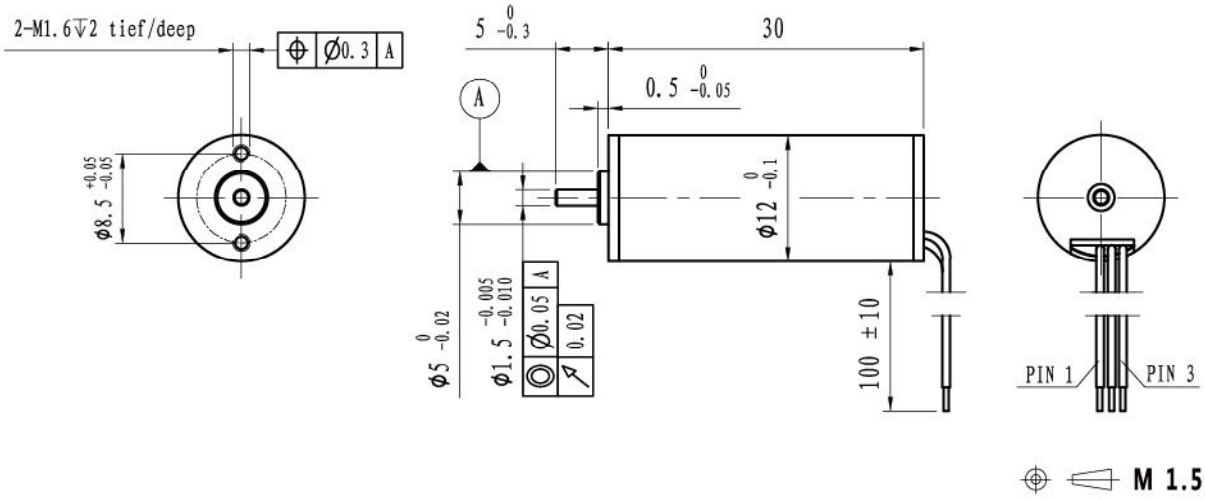

## Connection

**Conection** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG28 | yellow |
| Pin 2 | Motor winding MB | AWG28 | green |
| Pin 3 | Motor winding MC | AWG28 | blue |

## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

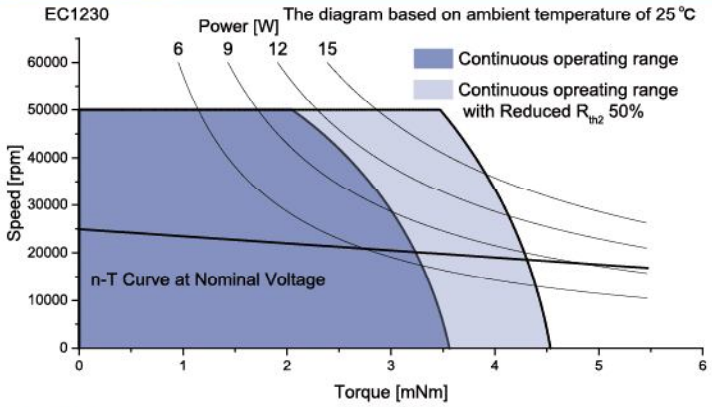



M 1.5:1

| Sensorless EC1230L-... | | 0625 | 0925 | 1225 |
|---|---|---|---|---|
| **Motor data** | | | | |
| **Values at nominal voltage** | | | | |
| 1 Nominal voltage | V | 6 | 9 | 12 |
| 2 No load speed | rpm | 25310 | 25100 | 24930 |
| 3 No load current | mA | 122 | 90 | 72 |
| 4 Nominal speed | rpm | 20719 | 20565 | 20449 |
| 5 Nominal torque | mNm | 3 | 3 | 3 |
| 6 Nominal current | A | 1.47 | 0.98 | 0.74 |
| 7 Stall torque | mNm | 16.5 | 16.6 | 16.7 |
| 8 Stall current | A | 7.55 | 5.03 | 3.77 |
| 9 Max. efficiency | % | 76.2 | 75 | 74.3 |
| 10 Terminal resistance | Ω | 0.8 | 1.79 | 3.18 |
| 11 Terminal inductance | mH | 0.02 | 0.04 | 0.08 |
| 12 Torque constant | mNm/A | 2.23 | 3.36 | 4.51 |
| 13 Speed constant | rpm/V | 4288 | 2840 | 2118 |
| 14 Speed/torque gradient | rpm/mNm | 1530 | 1512 | 1494 |
| 15 Mechanical time constant | ms | 5.1 | 5.1 | 5.0 |
| 16 Rotor inertia | gcm^2 | 0.32 | 0.32 | 0.32 |

| | | |
|---|---|---|
| 17 Thermal resistance housing-ambient | 28.4 K/W | |
| 18 Thermal resistance winding-housing | 7.1 K/W | |
| 19 Thermal time constant winding | 4 s | |
| 20 Thermal time constant motor | 240 s | |
| 21 Ambient temprature | -30...+100℃ | |
| 22 Max. permissible winding temperature | +125℃ | |
| 23 Max. permissible speed | 50000 rpm | |
| 24 Axial play at axial load <0.8 N | 0 mm | |
| >0.8 N | max. 0.3 mm | |
| 25 Radial play | preloaded | |
| 26 Max. axial load (dynamic) | 0.3 | |
| 27 Max.force for press fits (static) | 11N | |
| (static, shaft supported) | 200 N | |
| 28 Max. radial loading, 5mm from flange | 4.3 N | |
| 29 Number of pole pairs | 1 | |
| 30 Number of phases | 3 | |
| 31 Weight of motor | 16.3 g | |

## Operating Range



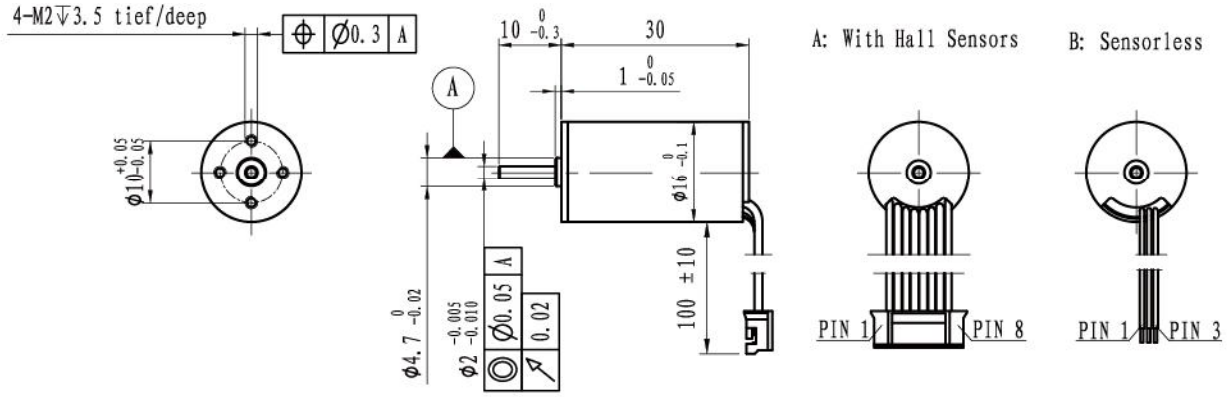

## Connection

**Conection** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG28 | yellow |
| Pin 2 | Motor winding MB | AWG28 | green |
| Pin 3 | Motor winding MC | AWG28 | blue |

## Configuration

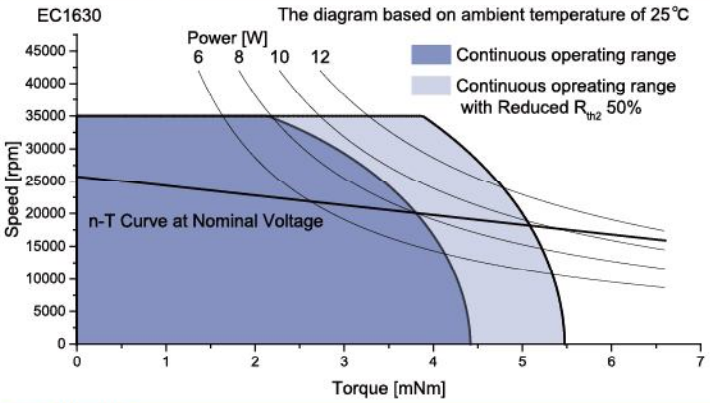
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.2

| | | | Sensorless EC1630L-... With hall sensor EC1630S-... | 1223 | 1223 | 2423 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | | |
| 1 | Nominal voltage | V | | 12 | 18 | 24 | | | | | |
| 2 | No load speed | rpm | | 23220 | 23511 | 23760 | | | | | |
| 3 | No load current | mA | | 210 | 150 | 100 | | | | | |
| 4 | Nominal speed | rpm | | 19138 | 19506 | 19203 | | | | | |
| 5 | Nominal torque | mNm | | 3.5 | 3.5 | 3.5 | | | | | |
| 6 | Nominal current | A | | 0.95 | 0.65 | 0.48 | | | | | |
| 7 | Stall torque | mNm | | 19.9 | 20.5 | 18.2 | | | | | |
| 8 | Stall current | A | | 4.44 | 3.1 | 2.09 | | | | | |
| 9 | Max. efficiency | % | | 61.3 | 60.9 | 61 | | | | | |
| 10 | Terminal resistance | Ω | | 2.7 | 5.8 | 11.5 | | | | | |
| 11 | Terminal inductance | mH | | 0.08 | 0.17 | 0.33 | | | | | |
| 12 | Torque constant | mNm/A | | 4.7 | 6.96 | 9.18 | | | | | |
| 13 | Speed constant | rpm/V | | 2031 | 1373 | 1040 | | | | | |
| 14 | Speed/torque gradient | rpm/mNm | | 1166 | 1144 | 1302 | | | | | |
| 15 | Mechanical time constant | ms | | 5.8 | 5.7 | 6.5 | | | | | |
| 16 | Rotor inertia | gcm^2 | | 0.48 | 0.48 | 0.48 | | | | | |
| 17 | Thermal resistance housing-ambient | 20.0 K/W | | | | | | | | | |
| 18 | Thermal resistance winding-housing | 8.8 K/W | | | | | | | | | |
| 19 | Thermal time constant winding | 8 s | | | | | | | | | |
| 20 | Thermal time constant motor | 236 s | | | | | | | | | |
| 21 | Ambient temprature | -30...+100°C | | | | | | | | | |
| 22 | Max. permissible winding temperature | +150°C | | | | | | | | | |
| 23 | Max. permissible speed | 35000 rpm | | | | | | | | | |
| 24 | Axial play at axial load <1.8 N | 0 mm | | | | | | | | | |
| | >1.8 N | max. 0.3 mm | | | | | | | | | |
| 25 | Radial play | preloaded | | | | | | | | | |
| 26 | Max. axial load (dynamic) | 1.3 N | | | | | | | | | |
| 27 | Max.force for press fits (static) | 15 N | | | | | | | | | |
| | (static, shaft supported) | 350 N | | | | | | | | | |
| 28 | Max. radial loading, 5mm from flange | 5 N | | | | | | | | | |
| 29 | Number of pole pairs | 1 | | | | | | | | | |
| 30 | Number of phases | 3 | | | | | | | | | |
| 31 | Weight of motor | 25 g | | | | | | | | | |

## Operating Range




## Connection

**Conection A (Sensor)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |

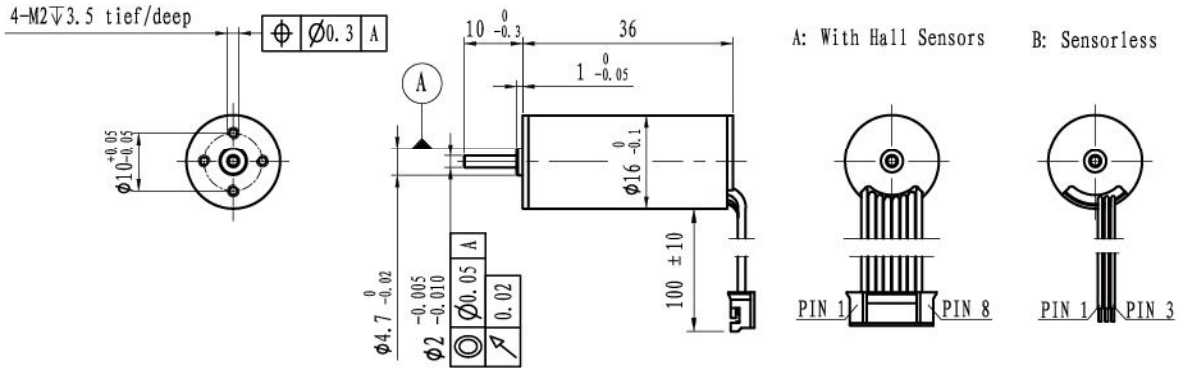
Conector
JST PH2.0-8P

**Conection B (Sensorless)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

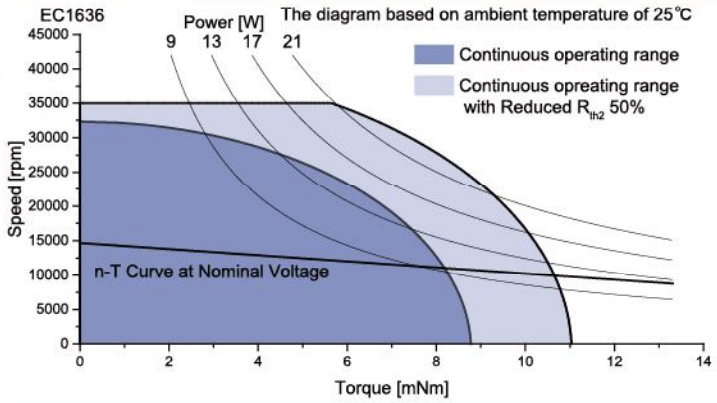
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.2

| | Sensorless / With hall sensor | | EC1636L-... / EC1636S-... | 0614 | 0914 | 1214 | 2414 |
|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | |
| **Values at nominal voltage** | | | | | | | |
| 1 | Nominal voltage | V | | 6 | 9 | 12 | 24 |
| 2 | No load speed | rpm | | 13835 | 14533 | 14460 | 14668 |
| 3 | No load current | mA | | 150 | 110 | 70 | 50 |
| 4 | Nominal speed | rpm | | 11412 | 11930 | 11615 | 12005 |
| 5 | Nominal torque | mNm | | 6 | 6 | 6 | 6 |
| 6 | Nominal current | A | | 1.62 | 1.14 | 0.84 | 0.44 |
| 7 | Stall torque | mNm | | 34.3 | 33.5 | 30.5 | 33 |
| 8 | Stall current | A | | 8.57 | 5.88 | 3.99 | 2.21 |
| 9 | Max. efficiency | % | | 75.3 | 74.5 | 75.3 | 72.2 |
| 10 | Terminal resistance | Ω | | 0.7 | 1.53 | 3.01 | 10.8 |
| 11 | Terminal inductance | mH | | 0.04 | 0.08 | 0.15 | 0.81 |
| 12 | Torque constant | mNm/A | | 4.07 | 5.8 | 7.79 | 15.3 |
| 13 | Speed constant | rpm/V | | 2347 | 1646 | 1227 | 625 |
| 14 | Speed/torque gradient | rpm/mNm | | 404 | 434 | 474 | 444 |
| 15 | Mechanical time constant | ms | | 2.6 | 2.8 | 3.1 | 2.9 |
| 16 | Rotor inertia | gcm^2 | | 0.62 | 0.62 | 0.62 | 0.62 |
| 17 | Thermal resistance housing-ambient | 17.1 K/W | | | | | |
| 18 | Thermal resistance winding-housing | 5.3 K/W | | | | | |
| 19 | Thermal time constant winding | 6 s | | | | | |
| 20 | Thermal time constant motor | 252 s | | | | | |
| 21 | Ambient temprature | -30...+100°C | | | | | |
| 22 | Max. permissible winding temperature | +150°C | | | | | |
| 23 | Max. permissible speed | 35000 rpm | | | | | |
| 24 | Axial play at axial load <1.8 N | 0 mm | | | | | |
| | >1.8 N | max. 0.3 mm | | | | | |
| 25 | Radial play | preloaded | | | | | |
| 26 | Max. axial load (dynamic) | 1.3 N | | | | | |
| 27 | Max.force for press fits (static) | 15 N | | | | | |
| | (static, shaft supported) | 350 N | | | | | |
| 28 | Max. radial loading, 5mm from flange | 5 N | | | | | |
| 29 | Number of pole pairs | 1 | | | | | |
| 30 | Number of phases | 3 | | | | | |
| 31 | Weight of motor | 32 g | | | | | |

**Operating Range**



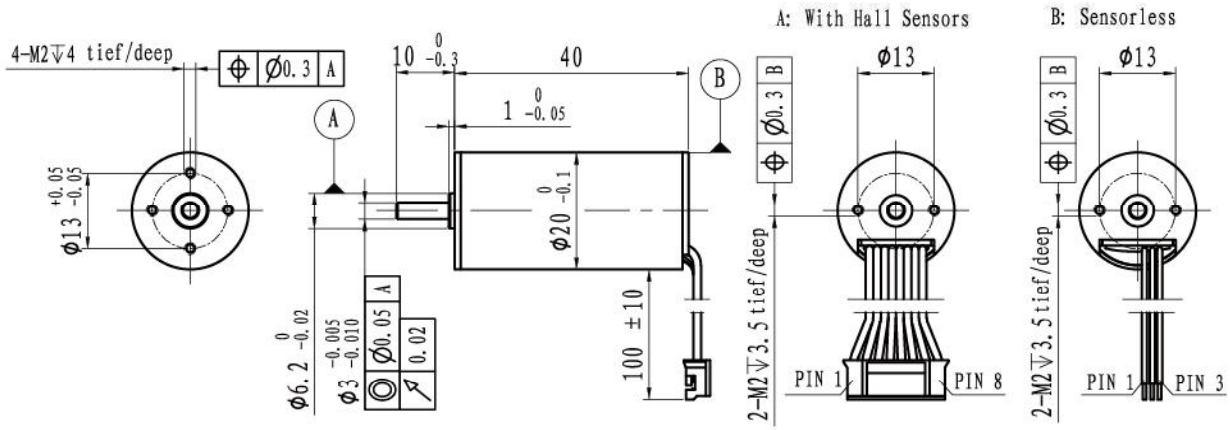

**Connection**

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | PVC | | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST | PH2.0-8P | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | PVC | | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

**Configuration**

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

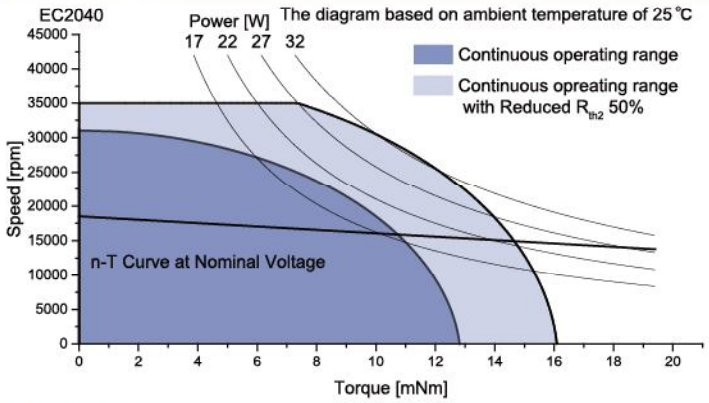



M 1:1.2

| Sensorless / With hall sensor | | EC2040L-... / EC2040S-... | 1218 | 1818 | 2418 | 3618 |
|---|---|---|---|---|---|---|
| **Motor data** | | | | | | |
| **Values at nominal voltage** | | | | | | |
| 1 | Nominal voltage | V | 12 | 18 | 24 | 36 |
| 2 | No load speed | rpm | 17780 | 18360 | 18500 | 18880 |
| 3 | No load current | mA | 149 | 137 | 105 | 83 |
| 4 | Nominal speed | rpm | 15083 | 16171 | 16042 | 16164 |
| 5 | Nominal torque | mNm | 10 | 10 | 10 | 10 |
| 6 | Nominal current | A | 1.72 | 1.22 | 0.93 | 0.64 |
| 7 | Stall torque | mNm | 65.9 | 83.9 | 75.3 | 69.5 |
| 8 | Stall current | A | 10.5 | 9.23 | 6.28 | 3.98 |
| 9 | Max. efficiency | % | 77.6 | 77.1 | 75.8 | 73.2 |
| 10 | Terminal resistance | Ω | 1.14 | 1.95 | 3.82 | 9.04 |
| 11 | Terminal inductance | mH | 0.08 | 0.17 | 0.30 | 0.62 |
| 12 | Torque constant | mNm/A | 6.35 | 9.22 | 12.2 | 17.8 |
| 13 | Speed constant | rpm/V | 1503 | 1035 | 784 | 536 |
| 14 | Speed/torque gradient | rpm/mNm | 270 | 219 | 246 | 272 |
| 15 | Mechanical time constant | ms | 6.4 | 5.2 | 5.8 | 6.4 |
| 16 | Rotor inertia | gcm^2 | 2.3 | 2.3 | 2.3 | 2.3 |

| | | |
|---|---|---|
| 17 | Thermal resistance housing-ambient | 13.8 K/W |
| 18 | Thermal resistance winding-housing | 4.3 K/W |
| 19 | Thermal time constant winding | 8 s |
| 20 | Thermal time constant motor | 366 s |
| 21 | Ambient temprature | -30...+100℃ |
| 22 | Max. permissible winding temperature | +150℃ |
| 23 | Max. permissible speed | 35000 rpm |
| 24 | Axial play at axial load <4 N | 0 mm |
| | >4 N | max. 0.3 mm |
| 25 | Radial play | preloaded |
| 26 | Max. axial load (dynamic) | 3.5 N |
| 27 | Max.force for press fits (static) | 44 N |
| | (static, shaft supported) | 1200 N |
| 28 | Max. radial loading, 5mm from flange | 15 N |
| 29 | Number of pole pairs | 1 |
| 30 | Number of phases | 3 |
| 31 | Weight of motor | 56 g |

## Operating Range




## Connection

**Conection A (Sensor)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |

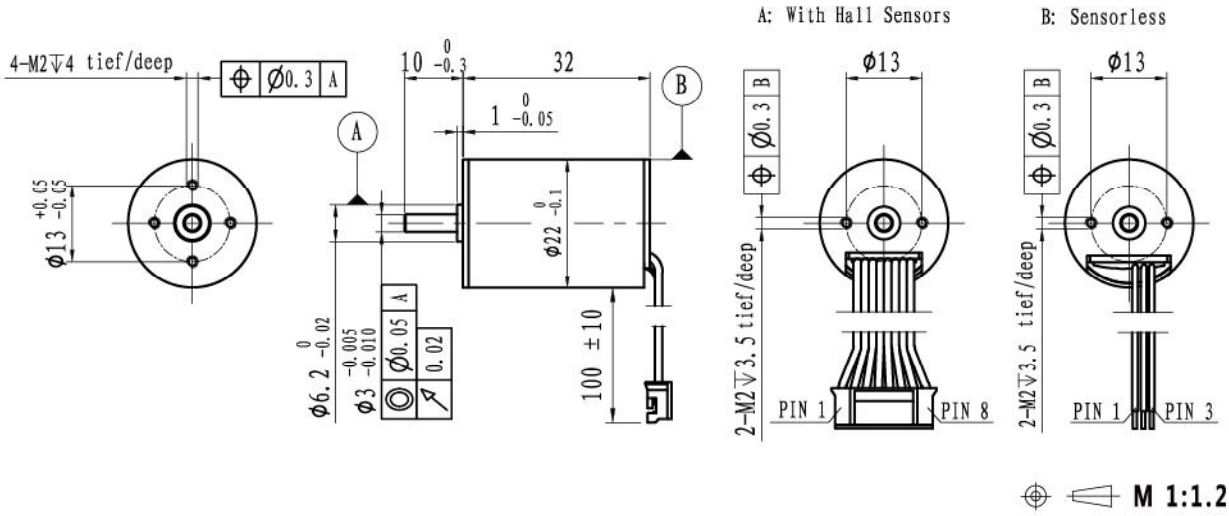
Conector
JST PH2.0-8P

**Conection B (Sensorless)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

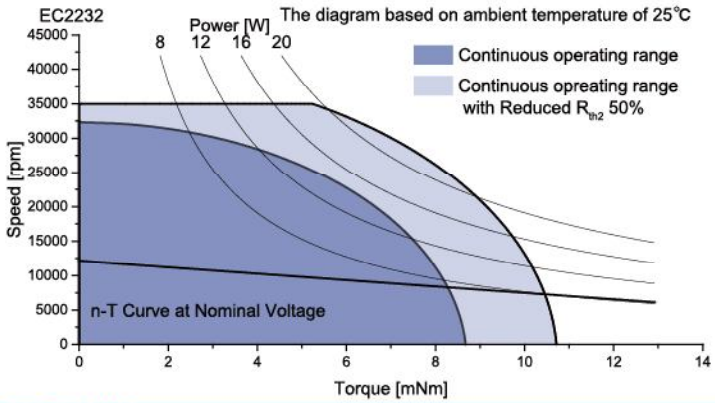
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.2

| | Sensorless / With hall sensor | | EC2232L-... / EC2232S-... | 0612 | 1212 | 1812 | 2412 |
|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | |
| **Values at nominal voltage** | | | | | | | |
| 1 | Nominal voltage | V | | 6 | 12 | 18 | 24 |
| 2 | No load speed | rpm | | 11700 | 11184 | 12080 | 12164 |
| 3 | No load current | mA | | 230 | 150 | 86 | 60 |
| 4 | Nominal speed | rpm | | 9585 | 9023 | 9937 | 9358 |
| 5 | Nominal torque | mNm | | 6 | 6 | 6 | 6 |
| 6 | Nominal current | A | | 1.5 | 0.76 | 0.52 | 0.39 |
| 7 | Stall torque | mNm | | 33.2 | 31.1 | 33.8 | 26 |
| 8 | Stall current | A | | 7.23 | 3.32 | 2.55 | 1.5 |
| 9 | Max. efficiency | % | | 67.5 | 62 | 66.6 | 64 |
| 10 | Terminal resistance | Ω | | 0.83 | 3.61 | 7.07 | 16 |
| 11 | Terminal inductance | mH | | 0.08 | 0.28 | 0.66 | 1.72 |
| 12 | Torque constant | mNm/A | | 4.74 | 9.78 | 13.7 | 18.1 |
| 13 | Speed constant | rpm/V | | 2014 | 976 | 695 | 528 |
| 14 | Speed/torque gradient | rpm/mNm | | 353 | 360 | 357 | 468 |
| 15 | Mechanical time constant | ms | | 5.5 | 5.6 | 5.6 | 7.3 |
| 16 | Rotor inertia | gcm^2 | | 1.5 | 1.5 | 1.5 | 1.5 |
| 17 | Thermal resistance housing-ambient | 15.2 K/W | | | | | |
| 18 | Thermal resistance winding-housing | 6.0 K/W | | | | | |
| 19 | Thermal time constant winding | 11 s | | | | | |
| 20 | Thermal time constant motor | 383 s | | | | | |
| 21 | Ambient temprature | -30...+100℃ | | | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | | | |
| 23 | Max. permissible speed | 35000 rpm | | | | | |
| 24 | Axial play at axial load <4 N | 0 mm | | | | | |
| | >4 N | max. 0.3 mm | | | | | |
| 25 | Radial play | preloaded | | | | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | | | | |
| 27 | Max.force for press fits (static) | 44 N | | | | | |
| | (static, shaft supported) | 1200 N | | | | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | | | | |
| 29 | Number of pole pairs | 1 | | | | | |
| 30 | Number of phases | 3 | | | | | |
| 31 | Weight of motor | 48 g | | | | | |

## Operating Range



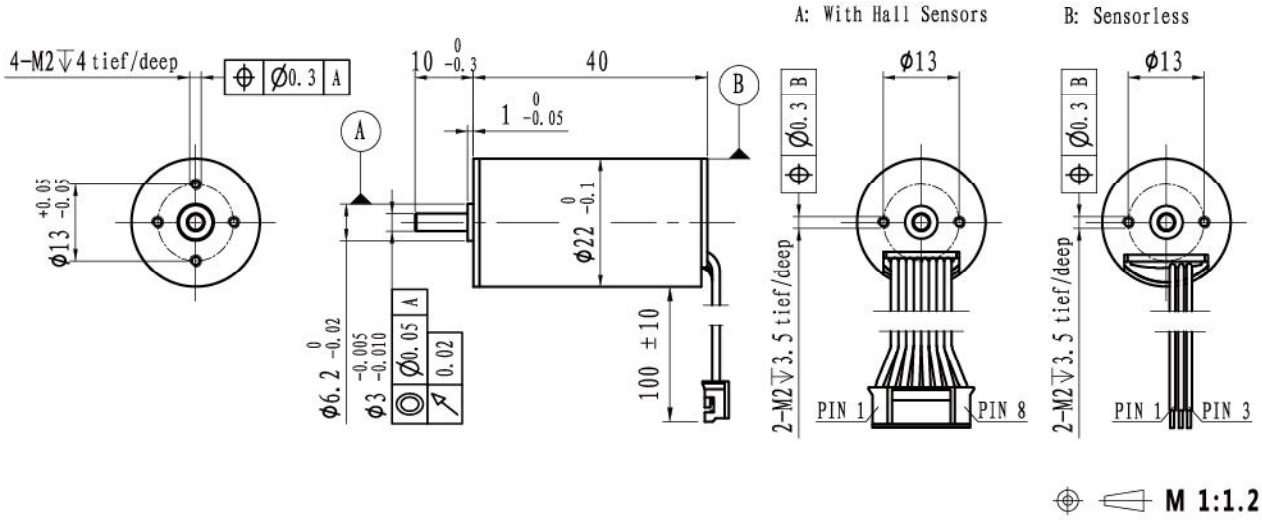

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | PVC | | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST | PH2.0-8P | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | PVC | | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

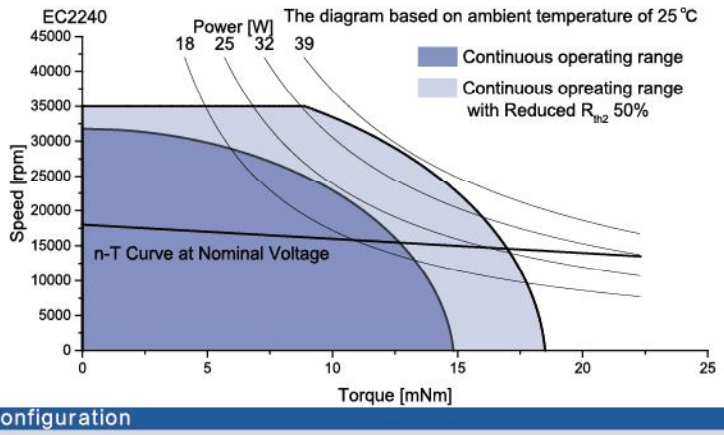



M 1:1.2

| Sensorless / With hall sensor | | EC2240L-... / EC2240S-... | 1216 | 2416 | 3016 | 3616 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | |
| 1 | Nominal voltage | V | 12 | 24 | 30 | 36 | | | | |
| 2 | No load speed | rpm | 16748 | 16768 | 16713 | 16679 | | | | |
| 3 | No load current | mA | 183 | 115 | 87 | 73 | | | | |
| 4 | Nominal speed | rpm | 14354 | 14337 | 14360 | 14128 | | | | |
| 5 | Nominal torque | mNm | 12 | 12 | 12 | 12 | | | | |
| 6 | Nominal current | A | 1.96 | 1.01 | 0.8 | 0.67 | | | | |
| 7 | Stall torque | mNm | 83.9 | 82.8 | 85.2 | 78.5 | | | | |
| 8 | Stall current | A | 12.6 | 6.28 | 5.15 | 3.95 | | | | |
| 9 | Max. efficiency | % | 77.4 | 74.8 | 75.7 | 74.7 | | | | |
| 10 | Terminal resistance | Ω | 0.95 | 3.82 | 5.83 | 9.11 | | | | |
| 11 | Terminal inductance | mH | 0.07 | 0.28 | 0.44 | 0.64 | | | | |
| 12 | Torque constant | mNm/A | 6.74 | 13.4 | 16.9 | 20.2 | | | | |
| 13 | Speed constant | rpm/V | 1416 | 712 | 567 | 472 | | | | |
| 14 | Speed/torque gradient | rpm/mNm | 200 | 203 | 196 | 213 | | | | |
| 15 | Mechanical time constant | ms | 4.7 | 4.8 | 4.7 | 5.1 | | | | |
| 16 | Rotor inertia | gcm^2 | 2.3 | 2.3 | 2.3 | 2.3 | | | | |

| | | |
|---|---|---|
| 17 | Thermal resistance housing-ambient | 12.7 K/W |
| 18 | Thermal resistance winding-housing | 5.0 K/W |
| 19 | Thermal time constant winding | 12 s |
| 20 | Thermal time constant motor | 420 s |
| 21 | Ambient temprature | -30...+100℃ |
| 22 | Max. permissible winding temperature | +150℃ |
| 23 | Max. permissible speed | 35000 rpm |
| 24 | Axial play at axial load <4 N | 0 mm |
| | >4 N | max. 0.3 mm |
| 25 | Radial play | preloaded |
| 26 | Max. axial load (dynamic) | 3.5 N |
| 27 | Max.force for press fits (static) | 44 N |
| | (static, shaft supported) | 1200 N |
| 28 | Max. radial loading, 5mm from flange | 15 N |
| 29 | Number of pole pairs | 1 |
| 30 | Number of phases | 3 |
| 31 | Weight of motor | 64 g |

## Operating Range

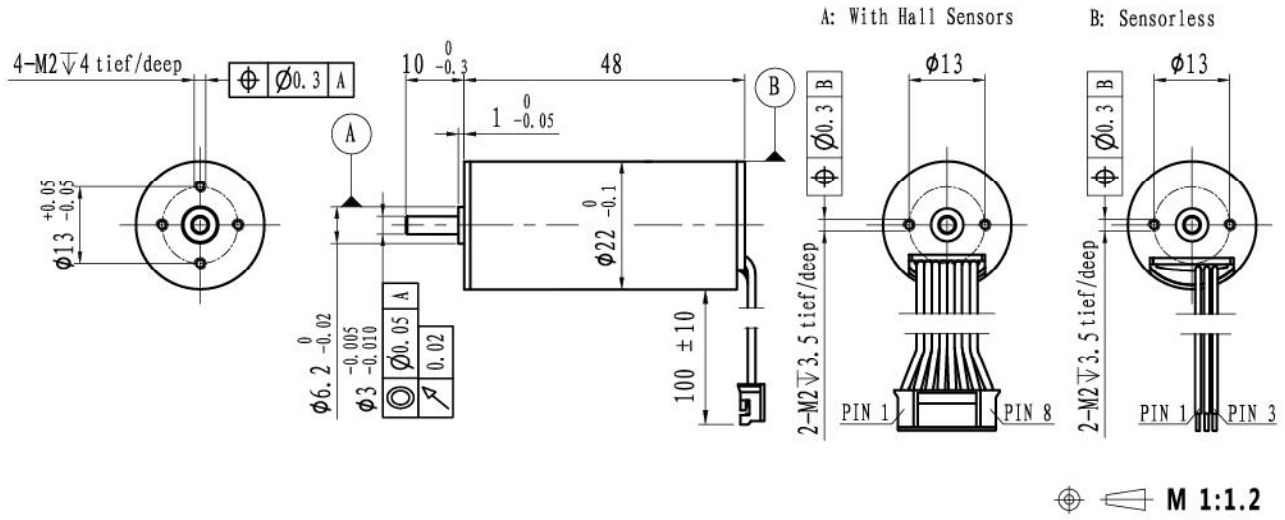



## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| | Pin 1 Vhall 3-18 VDC | AWG26 | black |
| | Pin 2 Hall sensor HA | AWG26 | black |
| | Pin 3 Hall sensor HB | AWG26 | black |
| | Pin 4 Hall sensor HC | AWG26 | black |
| | Pin 5 GND | AWG26 | black |
| | Pin 6 Motor winding MA | AWG26 | black |
| | Pin 7 Motor winding MB | AWG26 | black |
| | Pin 8 Motor winding MC | AWG26 | black |
| | Conector | | |
| | JST PH2.0-8P | | |
| **Conection B (Sensorless)** | | PVC | |
| | Pin 1 Motor winding MA | AWG26 | yellow |
| | Pin 2 Motor winding MB | AWG26 | green |
| | Pin 3 Motor winding MC | AWG26 | blue |

## Configuration

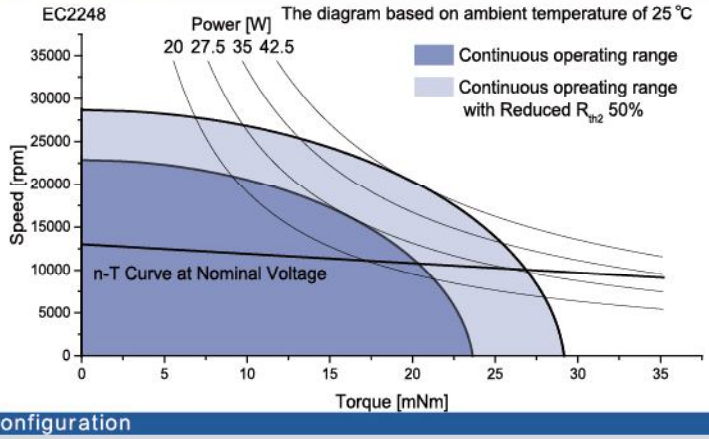
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.2

| Sensorless / With hall sensor | | | EC2248L-... / EC2248S-... | 1213 | 2413 | 3613 | 4813 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | | |
| 1 | Nominal voltage | V | | 12 | 24 | 36 | 48 | | | | |
| 2 | No load speed | rpm | | 13004 | 12930 | 13390 | 13641 | | | | |
| 3 | No load current | mA | | 179 | 102 | 82 | 69 | | | | |
| 4 | Nominal speed | rpm | | 11426 | 11413 | 11749 | 12159 | | | | |
| 5 | Nominal torque | mNm | | 18 | 18 | 18 | 18 | | | | |
| 6 | Nominal current | A | | 2.24 | 1.13 | 0.79 | 0.61 | | | | |
| 7 | Stall torque | mNm | | 148 | 153 | 147 | 166 | | | | |
| 8 | Stall current | A | | 17.2 | 8.86 | 5.88 | 5.07 | | | | |
| 9 | Max. efficiency | % | | 80.6 | 79.7 | 77.8 | 78 | | | | |
| 10 | Terminal resistance | Ω | | 0.7 | 2.71 | 6.12 | 9.47 | | | | |
| 11 | Terminal inductance | mH | | 0.07 | 0.28 | 0.58 | 0.97 | | | | |
| 12 | Torque constant | mNm/A | | 8.72 | 17.5 | 25.3 | 33.1 | | | | |
| 13 | Speed constant | rpm/V | | 1095 | 545 | 377 | 288 | | | | |
| 14 | Speed/torque gradient | rpm/mNm | | 87.7 | 84.3 | 91.2 | 82.3 | | | | |
| 15 | Mechanical time constant | ms | | 2.9 | 2.8 | 3.0 | 2.7 | | | | |
| 16 | Rotor inertia | gcm^2 | | 3.1 | 3.1 | 3.1 | 3.1 | | | | |
| 17 | Thermal resistance housing-ambient | 11.8 K/W | | | | | | | | | |
| 18 | Thermal resistance winding-housing | 4.7 K/W | | | | | | | | | |
| 19 | Thermal time constant winding | 21 s | | | | | | | | | |
| 20 | Thermal time constant motor | 504 s | | | | | | | | | |
| 21 | Ambient temprature | -30...+100℃ | | | | | | | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | | | | | | | |
| 23 | Max. permissible speed | 30000 rpm | | | | | | | | | |
| 24 | Axial play at axial load <4 N | 0 mm | | | | | | | | | |
| | >4 N | max. 0.3 mm | | | | | | | | | |
| 25 | Radial play | preloaded | | | | | | | | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | | | | | | | | |
| 27 | Max.force for press fits (static) | 44 N | | | | | | | | | |
| | (static, shaft supported) | 1200 N | | | | | | | | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | | | | | | | | |
| 29 | Number of pole pairs | 1 | | | | | | | | | |
| 30 | Number of phases | 3 | | | | | | | | | |
| 31 | Weight of motor | 85 g | | | | | | | | | |

**Operating Range**



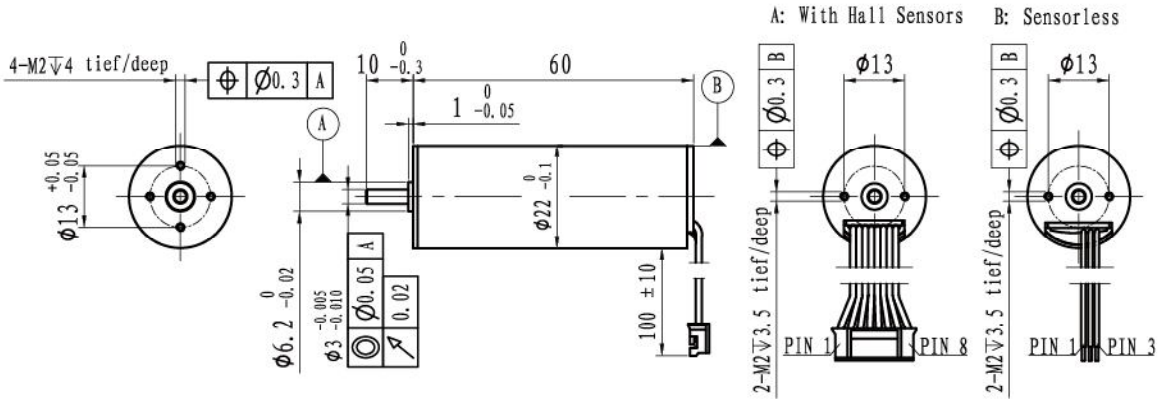

**Connection**

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

**Configuration**

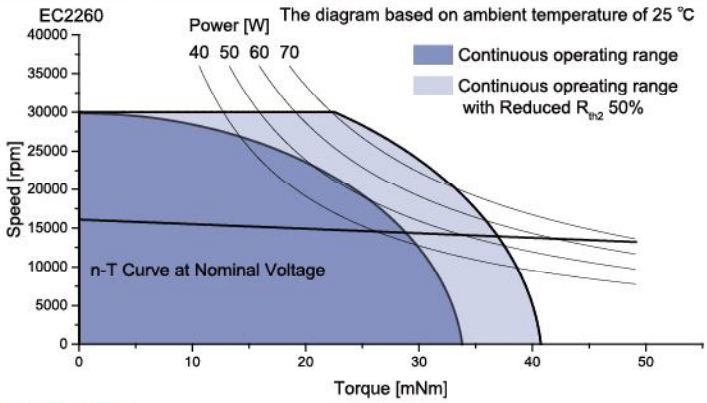
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.5

| Sensorless / With hall sensor | | EC2260L-... / EC2260S-... | 1216 | 2416 | 3616 | 4816 |
|---|---|---|---|---|---|---|
| **Motor data** | | | | | | |
| **Values at nominal voltage** | | | | | | |
| 1 Nominal voltage | V | | 12 | 24 | 36 | 48 |
| 2 No load speed | rpm | | 16360 | 16086 | 16030 | 16200 |
| 3 No load current | mA | | 440 | 230 | 170 | 110 |
| 4 Nominal speed | rpm | | 14517 | 14441 | 14364 | 14530 |
| 5 Nominal torque | mNm | | 28 | 28 | 28 | 28 |
| 6 Nominal current | A | | 4.49 | 2.22 | 1.49 | 1.11 |
| 7 Stall torque | mNm | | 249 | 274 | 269 | 272 |
| 8 Stall current | A | | 36.4 | 19.7 | 12.9 | 9.82 |
| 9 Max. efficiency | % | | 79.2 | 79.5 | 78.4 | 79.9 |
| 10 Terminal resistance | Ω | | 0.33 | 1.22 | 2.79 | 4.89 |
| 11 Terminal inductance | mH | | 0.03 | 0.13 | 0.30 | 0.52 |
| 12 Torque constant | mNm/A | | 6.92 | 14.1 | 21.2 | 28 |
| 13 Speed constant | rpm/V | | 1380 | 678 | 451 | 341 |
| 14 Speed/torque gradient | rpm/mNm | | 65.8 | 58.8 | 59.5 | 59.7 |
| 15 Mechanical time constant | ms | | 3.1 | 2.8 | 2.8 | 2.8 |
| 16 Rotor inertia | gcm^2 | | 4.5 | 4.5 | 4.5 | 4.5 |
| 17 Thermal resistance housing-ambient | 7.6 K/W | | | | | |
| 18 Thermal resistance winding-housing | 4.6 K/W | | | | | |
| 19 Thermal time constant winding | 29 s | | | | | |
| 20 Thermal time constant motor | 533 s | | | | | |
| 21 Ambient temprature | -30...+100℃ | | | | | |
| 22 Max. permissible winding temperature | +150℃ | | | | | |
| 23 Max. permissible speed | 30000 rpm | | | | | |
| 24 Axial play at axial load <4 N | 0 mm | | | | | |
| >4 N | max. 0.3 mm | | | | | |
| 25 Radial play | preloaded | | | | | |
| 26 Max. axial load (dynamic) | 3.5 N | | | | | |
| 27 Max.force for press fits (static) | 44 N | | | | | |
| (static, shaft supported) | 1200 N | | | | | |
| 28 Max. radial loading, 5mm from flange | 15 N | | | | | |
| 29 Number of pole pairs | 1 | | | | | |
| 30 Number of phases | 3 | | | | | |
| 31 Weight of motor | 122 g | | | | | |

## Operating Range

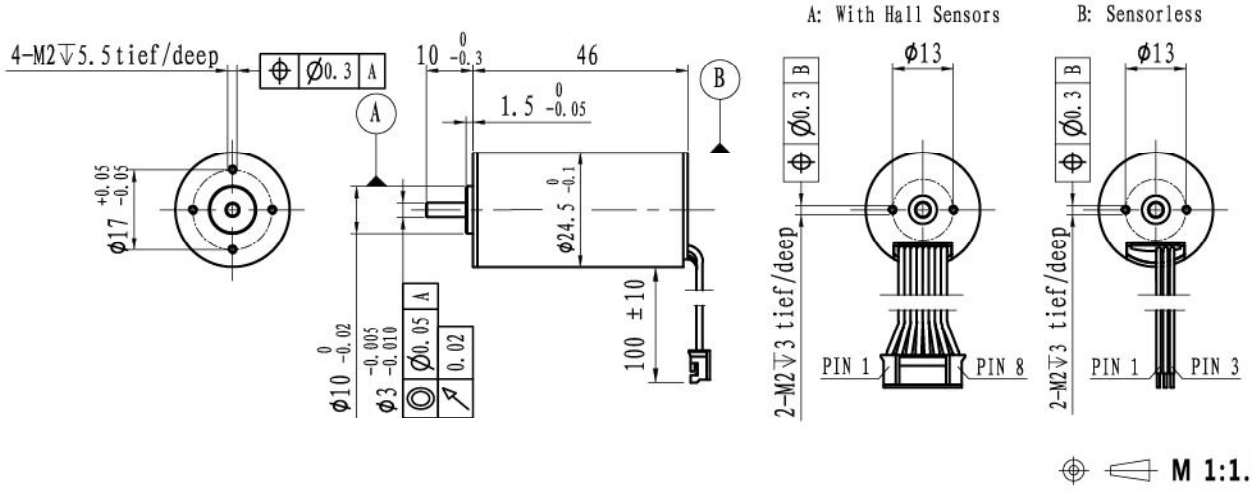



## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | PVC | | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |
| **Conection B (Sensorless)** | PVC | | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

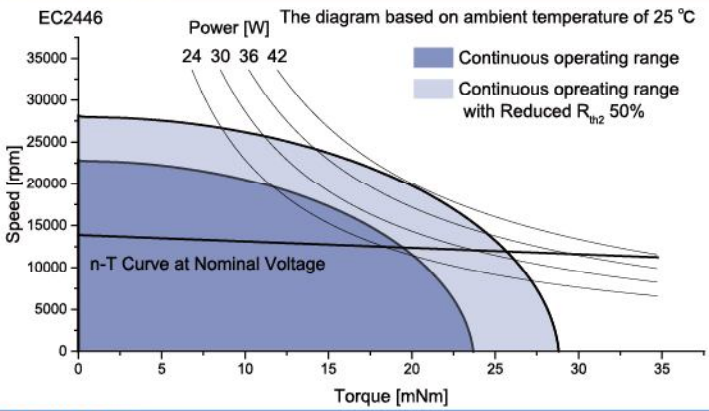
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| Sensorless / With hall sensor | | EC2446L-... / EC2446S-... | 1214 | 2414 | 3614 | 4814 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | |
| 1 | Nominal voltage | V | 12 | 24 | 36 | 48 | | | | |
| 2 | No load speed | rpm | 14150 | 13872 | 13920 | 13870 | | | | |
| 3 | No load current | mA | 249 | 124 | 106 | 79 | | | | |
| 4 | Nominal speed | rpm | 12678 | 12487 | 12662 | 12446 | | | | |
| 5 | Nominal torque | mNm | 18 | 18 | 18 | 18 | | | | |
| 6 | Nominal current | A | 2.5 | 1.23 | 0.84 | 0.63 | | | | |
| 7 | Stall torque | mNm | 173 | 180 | 199 | 175 | | | | |
| 8 | Stall current | A | 21.9 | 11.2 | 8.28 | 5.46 | | | | |
| 9 | Max. efficiency | % | 79.8 | 80 | 78.6 | 77.4 | | | | |
| 10 | Terminal resistance | Ω | 0.55 | 2.15 | 4.35 | 8.79 | | | | |
| 11 | Terminal inductance | mH | 0.07 | 0.29 | 0.62 | 1.14 | | | | |
| 12 | Torque constant | mNm/A | 8.01 | 16.3 | 24.4 | 32.6 | | | | |
| 13 | Speed constant | rpm/V | 1193 | 584 | 392 | 293 | | | | |
| 14 | Speed/torque gradient | rpm/mNm | 81.8 | 76.9 | 69.9 | 79.1 | | | | |
| 15 | Mechanical time constant | ms | 3.6 | 3.4 | 3.1 | 3.5 | | | | |
| 16 | Rotor inertia | gcm^2 | 4.2 | 4.2 | 4.2 | 4.2 | | | | |
| 17 | Thermal resistance housing-ambient | 11.6 K/W | | | | | | | | |
| 18 | Thermal resistance winding-housing | 5.6 K/W | | | | | | | | |
| 19 | Thermal time constant winding | 30 s | | | | | | | | |
| 20 | Thermal time constant motor | 557 s | | | | | | | | |
| 21 | Ambient temprature | -30...+100°C | | | | | | | | |
| 22 | Max. permissible winding temperature | +150°C | | | | | | | | |
| 23 | Max. permissible speed | 30000 rpm | | | | | | | | |
| 24 | Axial play at axial load <4 N | 0 mm | | | | | | | | |
| | >4 N | max. 0.3 mm | | | | | | | | |
| 25 | Radial play | preloaded | | | | | | | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | | | | | | | |
| 27 | Max.force for press fits (static) | 44 N | | | | | | | | |
| | (static, shaft supported) | 1200 N | | | | | | | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | | | | | | | |
| 29 | Number of pole pairs | 1 | | | | | | | | |
| 30 | Number of phases | 3 | | | | | | | | |
| 31 | Weight of motor | 92 g | | | | | | | | |

## Operating Range



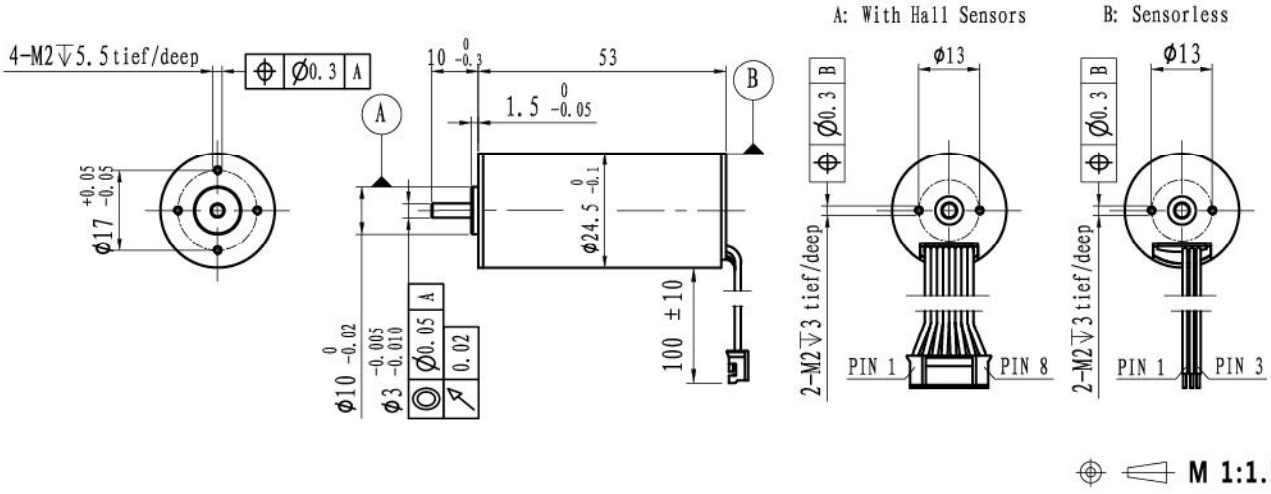

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

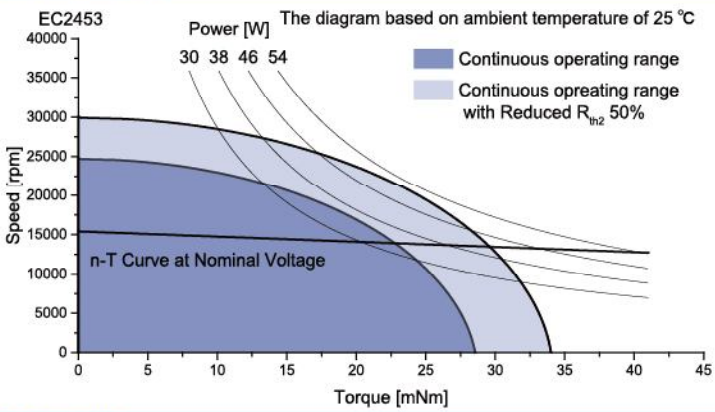
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.5

| Sensorless / With hall sensor | | EC2453L-... / EC2453S-... | 1215 | 2415 | 3615 | 4815 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | |
| 1 | Nominal voltage | V | 12 | 24 | 36 | 48 | | | | |
| 2 | No load speed | rpm | 15083 | 15398 | 15202 | 15310 | | | | |
| 3 | No load current | mA | 308 | 156 | 115 | 94 | | | | |
| 4 | Nominal speed | rpm | 13938 | 14347 | 14211 | 14263 | | | | |
| 5 | Nominal torque | mNm | 20 | 20 | 20 | 20 | | | | |
| 6 | Nominal current | A | 2.96 | 1.51 | 1.01 | 0.77 | | | | |
| 7 | Stall torque | mNm | 263 | 293 | 307 | 293 | | | | |
| 8 | Stall current | A | 35.3 | 20 | 13.8 | 9.96 | | | | |
| 9 | Max. efficiency | % | 82.2 | 83.1 | 82.6 | 81.5 | | | | |
| 10 | Terminal resistance | Ω | 0.34 | 1.2 | 2.61 | 4.82 | | | | |
| 11 | Terminal inductance | mH | 0.05 | 0.19 | 0.44 | 0.76 | | | | |
| 12 | Torque constant | mNm/A | 7.53 | 14.8 | 22.4 | 29.7 | | | | |
| 13 | Speed constant | rpm/V | 1268 | 647 | 426 | 322 | | | | |
| 14 | Speed/torque gradient | rpm/mNm | 57.2 | 52.5 | 49.6 | 52.3 | | | | |
| 15 | Mechanical time constant | ms | 3.5 | 3.2 | 3.1 | 3.2 | | | | |
| 16 | Rotor inertia | gcm^2 | 5.9 | 5.9 | 5.9 | 5.9 | | | | |
| 17 | Thermal resistance housing-ambient | 10.2 K/W | | | | | | | | |
| 18 | Thermal resistance winding-housing | 6.4 K/W | | | | | | | | |
| 19 | Thermal time constant winding | 36 s | | | | | | | | |
| 20 | Thermal time constant motor | 555 s | | | | | | | | |
| 21 | Ambient temprature | -30...+100℃ | | | | | | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | | | | | | |
| 23 | Max. permissible speed | 30000 rpm | | | | | | | | |
| 24 | Axial play at axial load <4 N | 0 mm | | | | | | | | |
| | >4 N | max. 0.3 mm | | | | | | | | |
| 25 | Radial play | preloaded | | | | | | | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | | | | | | | |
| 27 | Max.force for press fits (static) | 44 N | | | | | | | | |
| | (static, shaft supported) | 1200 N | | | | | | | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | | | | | | | |
| 29 | Number of pole pairs | 1 | | | | | | | | |
| 30 | Number of phases | 3 | | | | | | | | |
| 31 | Weight of motor | 110 g | | | | | | | | |

## Operating Range



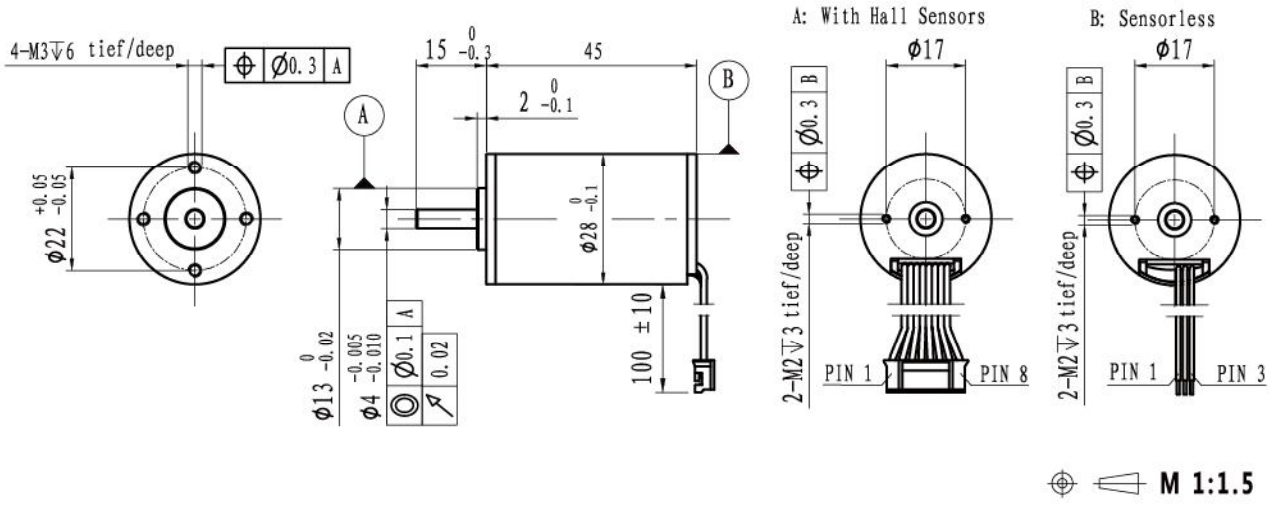

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

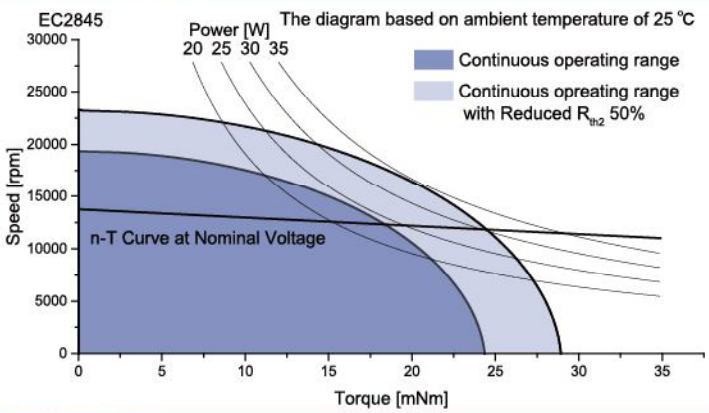
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.5

| | Sensorless / With hall sensor | EC2845L-... / EC2845S-... | 1213 | 2413 | 3613 | 4813 |
|---|---|---|---|---|---|---|
| **Motor data** | | | | | | |
| **Values at nominal voltage** | | | | | | |
| 1 | Nominal voltage | V | 12 | 24 | 36 | 48 |
| 2 | No load speed | rpm | 13737 | 13756 | 13783 | 13400 |
| 3 | No load current | mA | 202 | 128 | 84 | 79 |
| 4 | Nominal speed | rpm | 12232 | 12342 | 12432 | 11903 |
| 5 | Nominal torque | mNm | 18 | 18 | 18 | 18 |
| 6 | Nominal current | A | 2.38 | 1.22 | 0.81 | 0.61 |
| 7 | Stall torque | mNm | 164 | 175 | 184 | 161 |
| 8 | Stall current | A | 20.1 | 10.8 | 7.53 | 4.87 |
| 9 | Max. efficiency | % | 81 | 79.4 | 80 | 76.1 |
| 10 | Terminal resistance | Ω | 0.6 | 2.23 | 4.78 | 9.86 |
| 11 | Terminal inductance | mH | 0.08 | 0.34 | 0.73 | 1.47 |
| 12 | Torque constant | mNm/A | 8.26 | 16.5 | 24.7 | 33.7 |
| 13 | Speed constant | rpm/V | 1156 | 580 | 387 | 284 |
| 14 | Speed/torque gradient | rpm/mNm | 83.6 | 78.6 | 75 | 83.1 |
| 15 | Mechanical time constant | ms | 4.5 | 4.3 | 4.1 | 4.5 |
| 16 | Rotor inertia | gcm^2 | 5.2 | 5.2 | 5.2 | 5.2 |
| 17 | Thermal resistance housing-ambient | 9.6 K/W | | | | |
| 18 | Thermal resistance winding-housing | 6.3 K/W | | | | |
| 19 | Thermal time constant winding | 37 s | | | | |
| 20 | Thermal time constant motor | 584 s | | | | |
| 21 | Ambient temprature | -30...+100℃ | | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | | |
| 23 | Max. permissible speed | 25000 rpm | | | | |
| 24 | Axial play at axial load <8 N | 0 mm | | | | |
| | >8 N | max. 0.3 mm | | | | |
| 25 | Radial play | preloaded | | | | |
| 26 | Max. axial load (dynamic) | 7.5 N | | | | |
| 27 | Max.force for press fits (static) | 100 N | | | | |
| | (static, shaft supported) | 2000 N | | | | |
| 28 | Max. radial loading, 5mm from flange | 25 N | | | | |
| 29 | Number of pole pairs | 1 | | | | |
| 30 | Number of phases | 3 | | | | |
| 31 | Weight of motor | 120 g | | | | |

## Operating Range



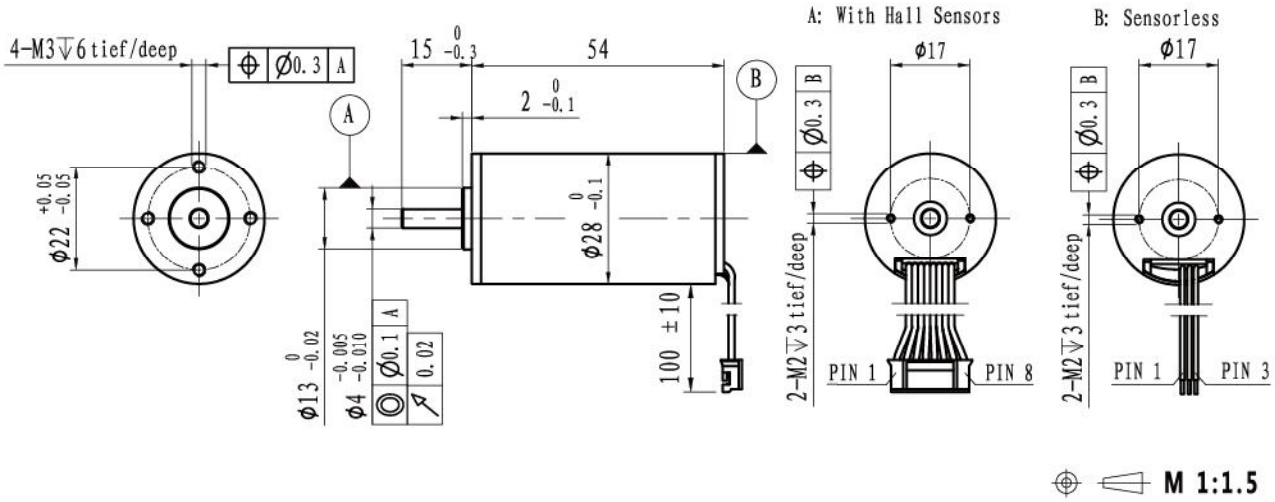

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

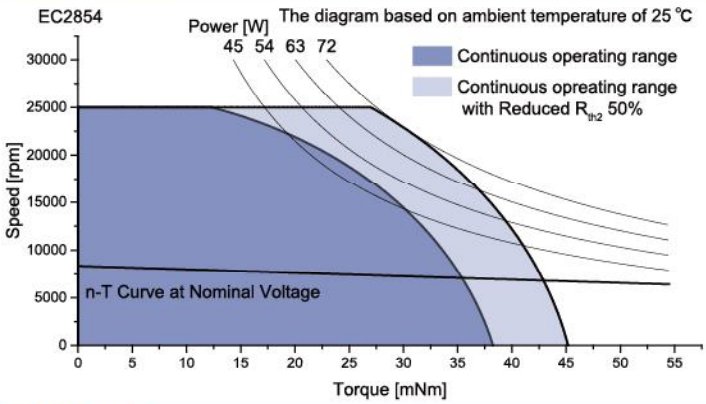
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.5

| | Sensorless<br>With hall sensor | | EC2854L-...<br>EC2854S-... | 1208 | 2408 | 3608 | 4808 |
|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | |
| **Values at nominal voltage** | | | | | | | |
| 1 | Nominal voltage | | V | 12 | 24 | 36 | 48 |
| 2 | No load speed | | rpm | 8031 | 8336 | 8175 | 8325 |
| 3 | No load current | | mA | 142 | 94 | 65 | 51 |
| 4 | Nominal speed | | rpm | 6646 | 7084 | 6891 | 6805 |
| 5 | Nominal torque | | mNm | 35 | 35 | 35 | 35 |
| 6 | Nominal current | | A | 2.62 | 1.38 | 0.91 | 0.7 |
| 7 | Stall torque | | mNm | 203 | 233 | 223 | 192 |
| 8 | Stall current | | A | 14.5 | 8.66 | 5.43 | 3.58 |
| 9 | Max. efficiency | | % | 81.2 | 80.3 | 79.3 | 77.6 |
| 10 | Terminal resistance | | Ω | 0.83 | 2.77 | 6.63 | 13.4 |
| 11 | Terminal inductance | | mH | 0.16 | 0.61 | 1.41 | 2.56 |
| 12 | Torque constant | | mNm/A | 14.1 | 27.2 | 41.5 | 54.3 |
| 13 | Speed constant | | rpm/V | 676 | 351 | 230 | 176 |
| 14 | Speed/torque gradient | | rpm/mNm | 39.6 | 35.8 | 36.7 | 43.4 |
| 15 | Mechanical time constant | | ms | 3.5 | 3.2 | 3.3 | 3.9 |
| 16 | Rotor inertia | | gcm^2 | 8.5 | 8.5 | 8.5 | 8.5 |
| 17 | Thermal resistance housing-ambient | | 7.1 K/W | | | | |
| 18 | Thermal resistance winding-housing | | 5 K/W | | | | |
| 19 | Thermal time constant winding | | 51 s | | | | |
| 20 | Thermal time constant motor | | 552 s | | | | |
| 21 | Ambient temprature | | -30...+100℃ | | | | |
| 22 | Max. permissible winding temperature | | +150℃ | | | | |
| 23 | Max. permissible speed | | 25000 rpm | | | | |
| 24 | Axial play at axial load | <8 N | 0 mm | | | | |
| | | >8 N | max. 0.3 mm | | | | |
| 25 | Radial play | | preloaded | | | | |
| 26 | Max. axial load (dynamic) | | 7.5 N | | | | |
| 27 | Max.force for press fits (static) | | 100 N | | | | |
| | (static, shaft supported) | | 2000 N | | | | |
| 28 | Max. radial loading, 5mm from flange | | 25 N | | | | |
| 29 | Number of pole pairs | | 1 | | | | |
| 30 | Number of phases | | 3 | | | | |
| 31 | Weight of motor | | 156 g | | | | |

## Operating Range



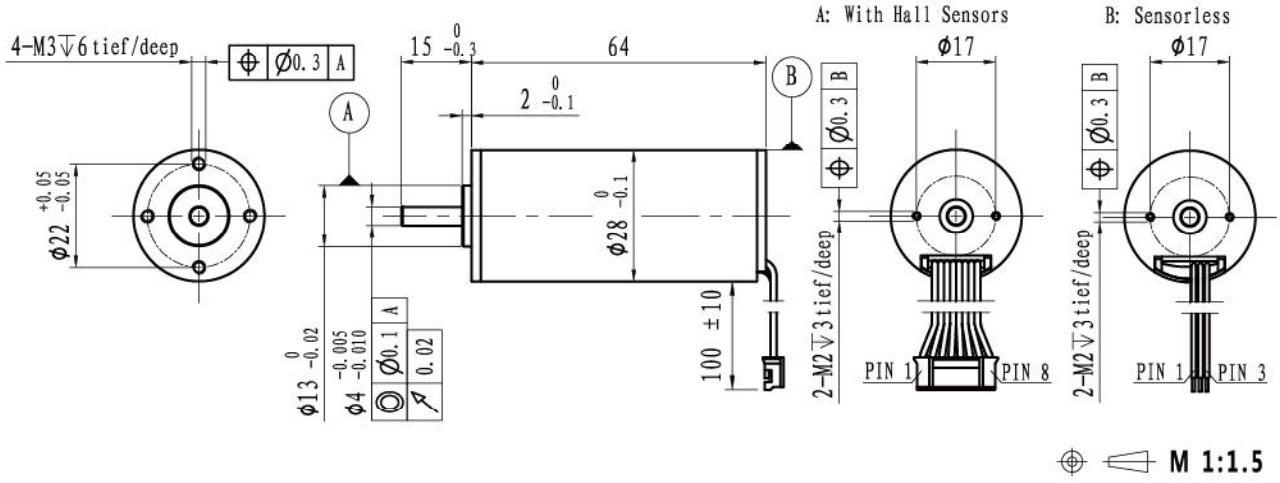

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

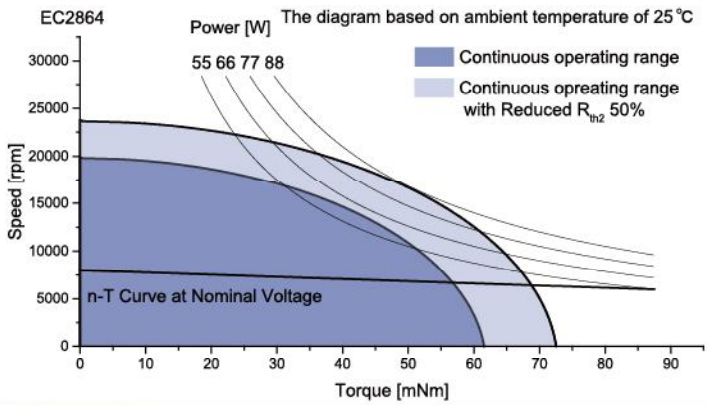



M 1:1.5

| | Sensorless / With hall sensor | | EC2864L-... / EC2864S-... | 1208 | 2408 | 3608 | 4808 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | | |
| 1 | Nominal voltage | | V | 12 | 24 | 36 | 48 | | | | |
| 2 | No load speed | | rpm | 7956 | 8014 | 8275 | 7960 | | | | |
| 3 | No load current | | mA | 182 | 104 | 92 | 59 | | | | |
| 4 | Nominal speed | | rpm | 6712 | 6840 | 7053 | 6782 | | | | |
| 5 | Nominal torque | | mNm | 50 | 50 | 50 | 50 | | | | |
| 6 | Nominal current | | A | 3.68 | 1.87 | 1.31 | 0.94 | | | | |
| 7 | Stall torque | | mNm | 320 | 341 | 339 | 338 | | | | |
| 8 | Stall current | | A | 22.6 | 12.1 | 8.33 | 5.99 | | | | |
| 9 | Max. efficiency | | % | 82.8 | 82.3 | 80.1 | 81.1 | | | | |
| 10 | Terminal resistance | | Ω | 0.53 | 1.98 | 4.32 | 8.02 | | | | |
| 11 | Terminal inductance | | mH | 0.11 | 0.46 | 0.96 | 1.83 | | | | |
| 12 | Torque constant | | mNm/A | 14.3 | 28.4 | 41.1 | 57 | | | | |
| 13 | Speed constant | | rpm/V | 668 | 337 | 232 | 167 | | | | |
| 14 | Speed/torque gradient | | rpm/mNm | 24.9 | 23.5 | 24.4 | 23.6 | | | | |
| 15 | Mechanical time constant | | ms | 2.5 | 2.4 | 2.5 | 2.4 | | | | |
| 16 | Rotor inertia | | gcm^2 | 9.6 | 9.6 | 9.6 | 9.6 | | | | |

| | | |
|---|---|---|
| 17 | Thermal resistance housing-ambient | 5.5 K/W |
| 18 | Thermal resistance winding-housing | 4 K/W |
| 19 | Thermal time constant winding | 56 s |
| 20 | Thermal time constant motor | 521 s |
| 21 | Ambient temprature | -30...+100℃ |
| 22 | Max. permissible winding temperature | +150℃ |
| 23 | Max. permissible speed | 25000 rpm |
| 24 | Axial play at axial load <8 N | 0 mm |
| | >8 N | max. 0.3 mm |
| 25 | Radial play | preloaded |
| 26 | Max. axial load (dynamic) | 7.5 N |
| 27 | Max.force for press fits (static) | 100 N |
| | (static, shaft supported) | 2000 N |
| 28 | Max. radial loading, 5mm from flange | 25 N |
| 29 | Number of pole pairs | 1 |
| 30 | Number of phases | 3 |
| 31 | Weight of motor | 195 g |

## Operating Range



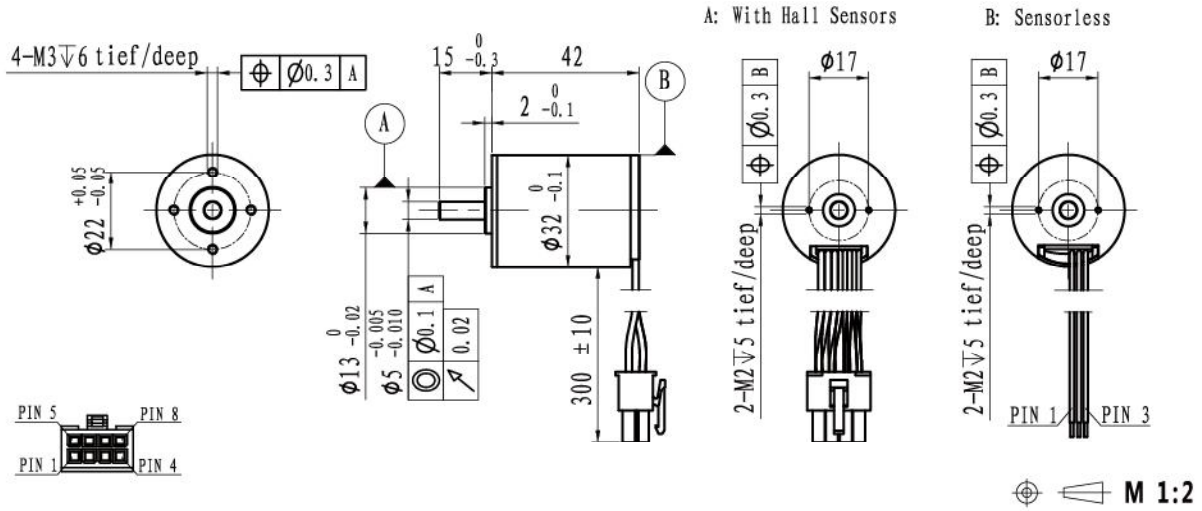

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

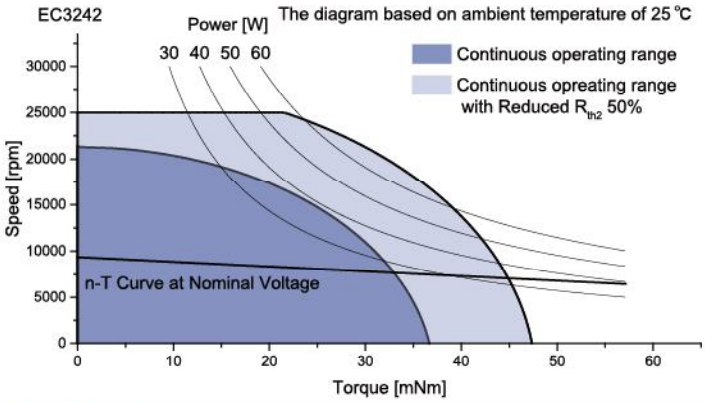
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| | Sensorless<br>With hall sensor | | EC3242L-...<br>EC3242S-... | 1209 | 2409 | 3609 | 4809 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | | |
| 1 | Nominal voltage | | V | 12 | 24 | 36 | 48 | | | | |
| 2 | No load speed | | rpm | 9319 | 9516 | 9269 | 9389 | | | | |
| 3 | No load current | | mA | 380 | 210 | 120 | 90 | | | | |
| 4 | Nominal speed | | rpm | 8198 | 8364 | 8219 | 8124 | | | | |
| 5 | Nominal torque | | mNm | 25 | 25 | 25 | 25 | | | | |
| 6 | Nominal current | | A | 2.46 | 1.27 | 0.81 | 0.61 | | | | |
| 7 | Stall torque | | mNm | 208 | 206 | 221 | 186 | | | | |
| 8 | Stall current | | A | 17.6 | 8.99 | 6.19 | 3.98 | | | | |
| 9 | Max. efficiency | | % | 72.8 | 71.8 | 74.1 | 72.2 | | | | |
| 10 | Terminal resistance | | Ω | 0.68 | 2.67 | 5.82 | 12.1 | | | | |
| 11 | Terminal inductance | | mH | 0.11 | 0.40 | 0.98 | 1.79 | | | | |
| 12 | Torque constant | | mNm/A | 12 | 23.5 | 36.4 | 47.7 | | | | |
| 13 | Speed constant | | rpm/V | 794 | 406 | 263 | 200 | | | | |
| 14 | Speed/torque gradient | | rpm/mNm | 44.9 | 46.1 | 42 | 50.6 | | | | |
| 15 | Mechanical time constant | | ms | 4.4 | 4.5 | 4.1 | 5.0 | | | | |
| 16 | Rotor inertia | | gcm^2 | 9.4 | 9.4 | 9.4 | 9.4 | | | | |
| 17 | Thermal resistance housing-ambient | | 8.8 K/W | | | | | | | | |
| 18 | Thermal resistance winding-housing | | 2.7 K/W | | | | | | | | |
| 19 | Thermal time constant winding | | 23.5 s | | | | | | | | |
| 20 | Thermal time constant motor | | 560 s | | | | | | | | |
| 21 | Ambient temprature | | -30...+100°C | | | | | | | | |
| 22 | Max. permissible winding temperature | | +150°C | | | | | | | | |
| 23 | Max. permissible speed | | 25000 rpm | | | | | | | | |
| 24 | Axial play at axial load | <8 N | 0 mm | | | | | | | | |
| | | >8 N | max. 0.3 mm | | | | | | | | |
| 25 | Radial play | | preloaded | | | | | | | | |
| 26 | Max. axial load (dynamic) | | 7.5 N | | | | | | | | |
| 27 | Max.force for press fits (static) | | 100 N | | | | | | | | |
| | (static, shaft supported) | | 2700 N | | | | | | | | |
| 28 | Max. radial loading, 5mm from flange | | 25 N | | | | | | | | |
| 29 | Number of pole pairs | | 1 | | | | | | | | |
| 30 | Number of phases | | 3 | | | | | | | | |
| 31 | Weight of motor | | 147 g | | | | | | | | |

## Operating Range




## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

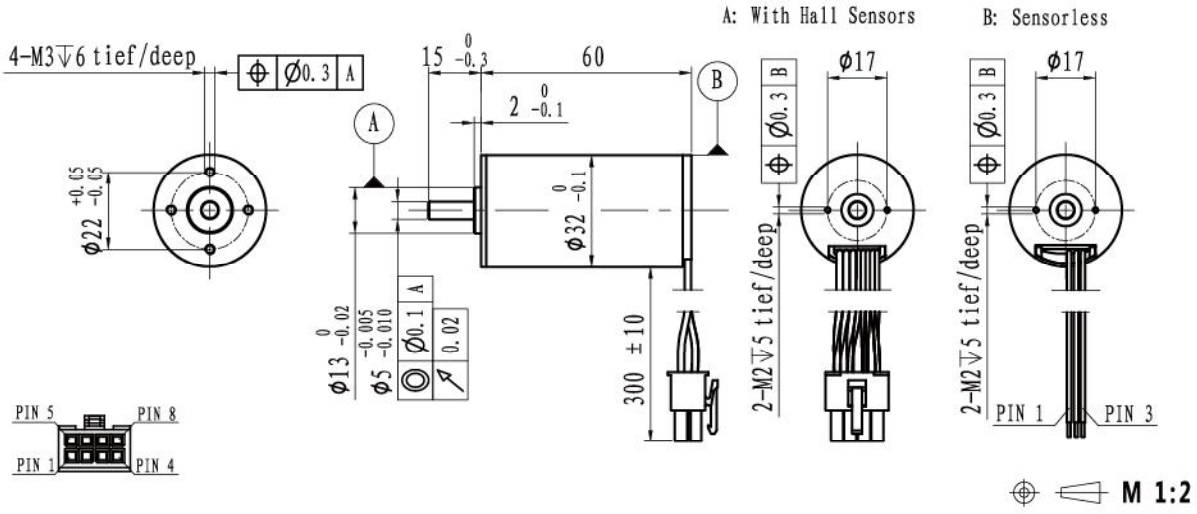
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

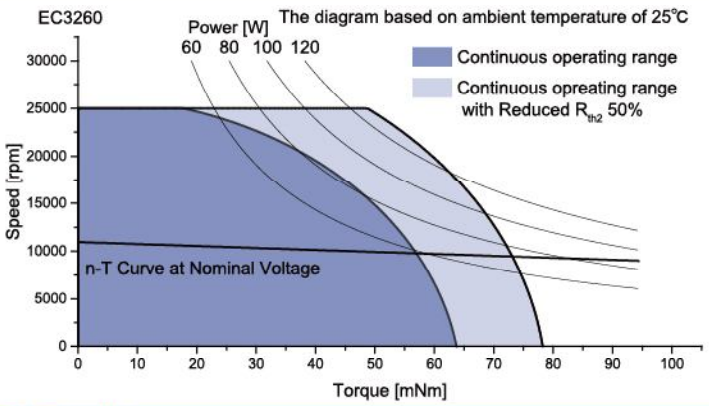
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| Sensorless / With hall sensor | | EC3260L-... / EC3260S-... | 1211 | 2411 | 3611 | 4811 |
|---|---|---|---|---|---|---|
| **Motor data** | | | | | | |
| **Values at nominal voltage** | | | | | | |
| 1 | Nominal voltage | V | 12 | 24 | 36 | 48 |
| 2 | No load speed | rpm | 10845 | 11038 | 10937 | 11125 |
| 3 | No load current | mA | 430 | 190 | 130 | 90 |
| 4 | Nominal speed | rpm | 9889 | 10027 | 9931 | 10087 |
| 5 | Nominal torque | mNm | 50 | 50 | 50 | 50 |
| 6 | Nominal current | A | 5.2 | 2.62 | 1.73 | 1.31 |
| 7 | Stall torque | mNm | 567 | 546 | 544 | 536 |
| 8 | Stall current | A | 54.5 | 26.7 | 17.6 | 13.2 |
| 9 | Max. efficiency | % | 83 | 83.8 | 83.5 | 84.2 |
| 10 | Terminal resistance | Ω | 0.22 | 0.9 | 2.05 | 3.64 |
| 11 | Terminal inductance | mH | 0.08 | 0.32 | 0.90 | 1.22 |
| 12 | Torque constant | mNm/A | 10.5 | 20.6 | 31.2 | 40.9 |
| 13 | Speed constant | rpm/V | 911 | 463 | 306 | 233 |
| 14 | Speed/torque gradient | rpm/mNm | 19.1 | 20.2 | 20.1 | 20.8 |
| 15 | Mechanical time constant | ms | 3.1 | 3.3 | 3.3 | 3.4 |
| 16 | Rotor inertia | gcm^2 | 15.5 | 15.5 | 15.5 | 15.5 |
| 17 | Thermal resistance housing-ambient | 6 K/W | | | | |
| 18 | Thermal resistance winding-housing | 3.2 K/W | | | | |
| 19 | Thermal time constant winding | 36 s | | | | |
| 20 | Thermal time constant motor | 626 s | | | | |
| 21 | Ambient temprature | -30...+100°C | | | | |
| 22 | Max. permissible winding temperature | +150°C | | | | |
| 23 | Max. permissible speed | 25000 rpm | | | | |
| 24 | Axial play at axial load <8 N | 0 mm | | | | |
| | >8 N | max. 0.3 mm | | | | |
| 25 | Radial play | preloaded | | | | |
| 26 | Max. axial load (dynamic) | 7.5 N | | | | |
| 27 | Max.force for press fits (static) | 100 N | | | | |
| | (static, shaft supported) | 2700 N | | | | |
| 28 | Max. radial loading, 5mm from flange | 25 N | | | | |
| 29 | Number of pole pairs | 1 | | | | |
| 30 | Number of phases | 3 | | | | |
| 31 | Weight of motor | 217 g | | | | |

## Operating Range




## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

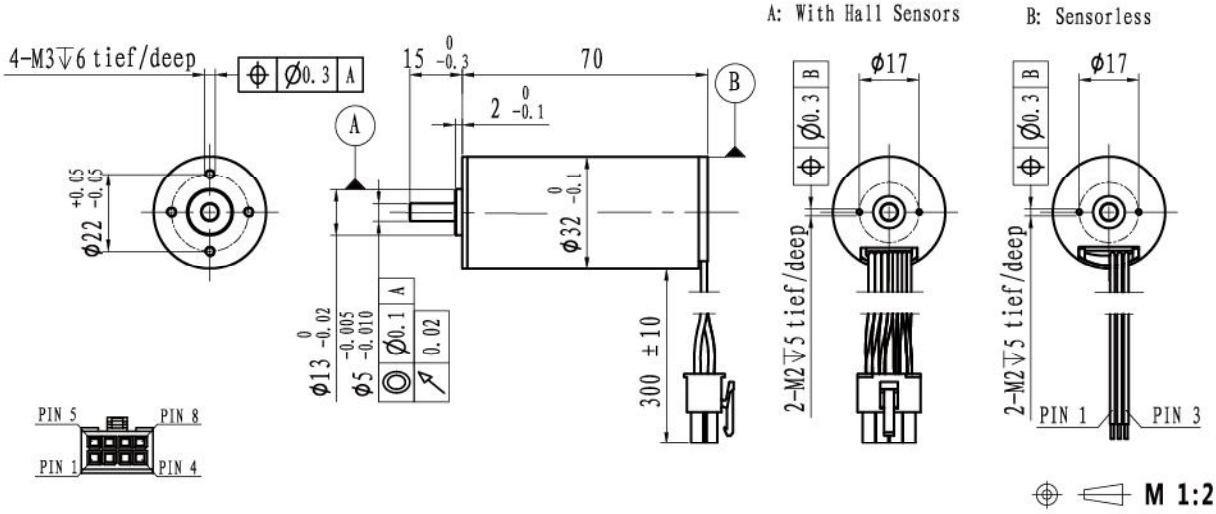
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

## Configuration

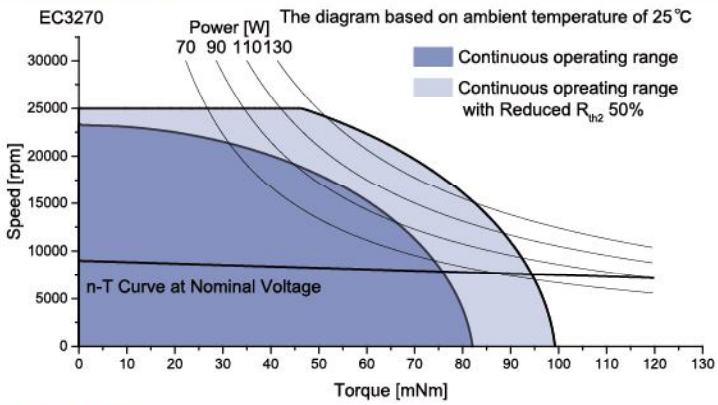
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| Sensorless / With hall sensor | | EC3270L-... / EC3270S-... | 1209 | 2409 | 3609 | 4809 |
|---|---|---|---|---|---|---|
| **Motor data** | | | | | | |
| **Values at nominal voltage** | | | | | | |
| 1 | Nominal voltage | V | 12 | 24 | 36 | 48 |
| 2 | No load speed | rpm | 8998 | 9055 | 9252 | 9080 |
| 3 | No load current | mA | 450 | 180 | 100 | 90 |
| 4 | Nominal speed | rpm | 7991 | 7963 | 8129 | 8077 |
| 5 | Nominal torque | mNm | 70 | 70 | 70 | 70 |
| 6 | Nominal current | A | 6 | 2.97 | 2 | 1.49 |
| 7 | Stall torque | mNm | 625 | 581 | 577 | 634 |
| 8 | Stall current | A | 50 | 23.3 | 15.7 | 12.7 |
| 9 | Max. efficiency | % | 81.9 | 83.2 | 84.7 | 83.9 |
| 10 | Terminal resistance | Ω | 0.24 | 1.03 | 2.29 | 3.77 |
| 11 | Terminal inductance | mH | 0.09 | 0.35 | 0.75 | 1.33 |
| 12 | Torque constant | mNm/A | 12.6 | 25.1 | 36.9 | 50.1 |
| 13 | Speed constant | rpm/V | 757 | 380 | 259 | 191 |
| 14 | Speed/torque gradient | rpm/mNm | 14.4 | 15.6 | 16 | 14.3 |
| 15 | Mechanical time constant | ms | 2.8 | 3.0 | 3.1 | 2.8 |
| 16 | Rotor inertia | gcm^2 | 18.5 | 18.5 | 18.5 | 18.5 |

| | | |
|---|---|---|
| 17 | Thermal resistance housing-ambient | 4.7 K/W |
| 18 | Thermal resistance winding-housing | 2.9 K/W |
| 19 | Thermal time constant winding | 38 s |
| 20 | Thermal time constant motor | 568 s |
| 21 | Ambient temprature | -30...+100℃ |
| 22 | Max. permissible winding temperature | +150℃ |
| 23 | Max. permissible speed | 25000 rpm |
| 24 | Axial play at axial load <8 N | 0 mm |
| | >8 N | max. 0.3 mm |
| 25 | Radial play | preloaded |
| 26 | Max. axial load (dynamic) | 7.5 N |
| 27 | Max.force for press fits (static) | 100 N |
| | (static, shaft supported) | 2700 N |
| 28 | Max. radial loading, 5mm from flange | 25 N |
| 29 | Number of pole pairs | 1 |
| 30 | Number of phases | 3 |
| 31 | Weight of motor | 256 g |

## Operating Range




## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

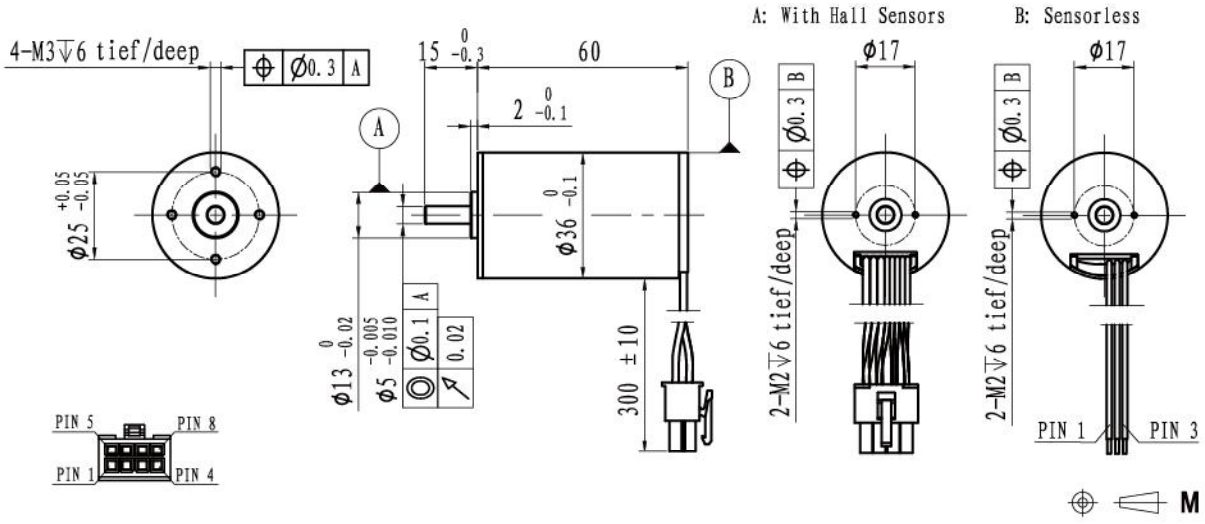
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

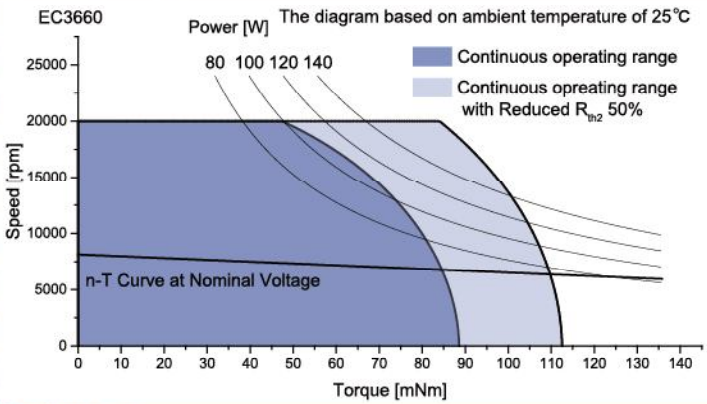
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| | Sensorless<br>With hall sensor | | EC3660L-...<br>EC3660S-... | 1208 | 2408 | 3608 | 4808 |
|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | |
| **Values at nominal voltage** | | | | | | | |
| 1 | Nominal voltage | | V | 12 | 24 | 36 | 48 |
| 2 | No load speed | | rpm | 8050 | 8140 | 8014 | 8083 |
| 3 | No load current | | mA | 288 | 148 | 101 | 84 |
| 4 | Nominal speed | | rpm | 6794 | 6784 | 6804 | 6766 |
| 5 | Nominal torque | | mNm | 82 | 82 | 82 | 82 |
| 6 | Nominal current | | A | 6.09 | 3.08 | 2.03 | 1.54 |
| 7 | Stall torque | | mNm | 526 | 492 | 543 | 503 |
| 8 | Stall current | | A | 37.5 | 17.8 | 12.9 | 9.04 |
| 9 | Max. efficiency | | % | 83.2 | 82.6 | 83.1 | 81.6 |
| 10 | Terminal resistance | | Ω | 0.32 | 1.35 | 2.8 | 5.31 |
| 11 | Terminal inductance | | mH | 0.09 | 0.38 | 0.88 | 1.6 |
| 12 | Torque constant | | mNm/A | 14.1 | 27.9 | 42.6 | 56.2 |
| 13 | Speed constant | | rpm/V | 676 | 342 | 224 | 170 |
| 14 | Speed/torque gradient | | rpm/mNm | 15.3 | 16.5 | 14.8 | 16.1 |
| 15 | Mechanical time constant | | ms | 3.1 | 3.4 | 3.0 | 3.3 |
| 16 | Rotor inertia | | gcm^2 | 19.5 | 19.5 | 19.5 | 19.5 |
| 17 | Thermal resistance housing-ambient | | 4.4 K/W | | | | |
| 18 | Thermal resistance winding-housing | | 1.3 K/W | | | | |
| 19 | Thermal time constant winding | | 15 s | | | | |
| 20 | Thermal time constant motor | | 582 s | | | | |
| 21 | Ambient temprature | | -30...+100°C | | | | |
| 22 | Max. permissible winding temperature | | +150°C | | | | |
| 23 | Max. permissible speed | | 20000 rpm | | | | |
| 24 | Axial play at axial load | <8 N | 0 mm | | | | |
| | | >8 N | max. 0.3 mm | | | | |
| 25 | Radial play | | preloaded | | | | |
| 26 | Max. axial load (dynamic) | | 7.5 N | | | | |
| 27 | Max.force for press fits (static) | | 100 N | | | | |
| | (static, shaft supported) | | 2700 N | | | | |
| 28 | Max. radial loading, 5mm from flange | | 25 N | | | | |
| 29 | Number of pole pairs | | 1 | | | | |
| 30 | Number of phases | | 3 | | | | |
| 31 | Weight of motor | | 272 g | | | | |

## Operating Range




## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

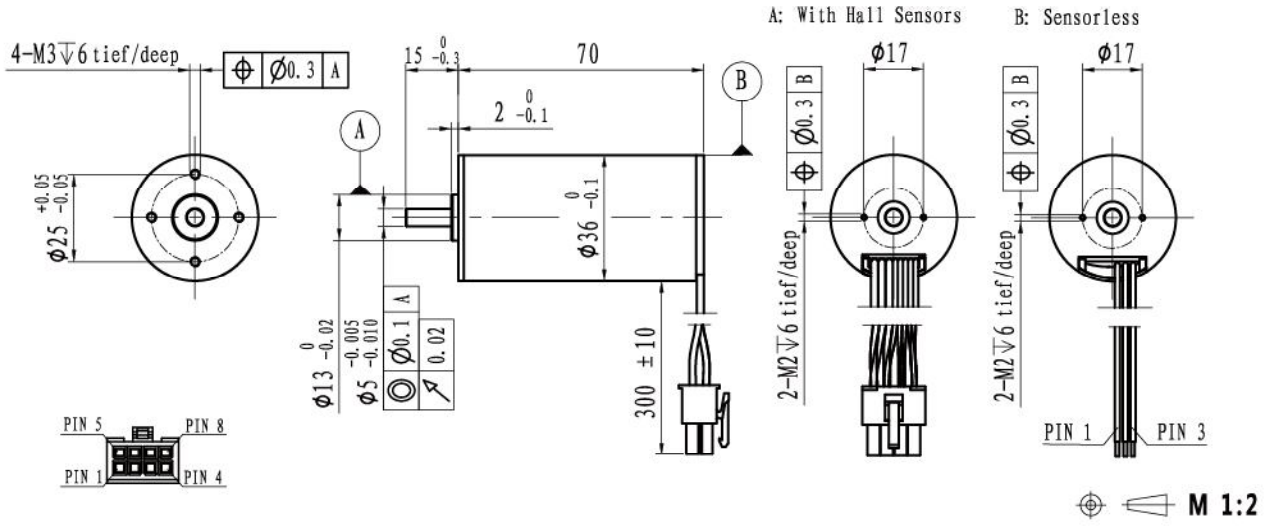
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

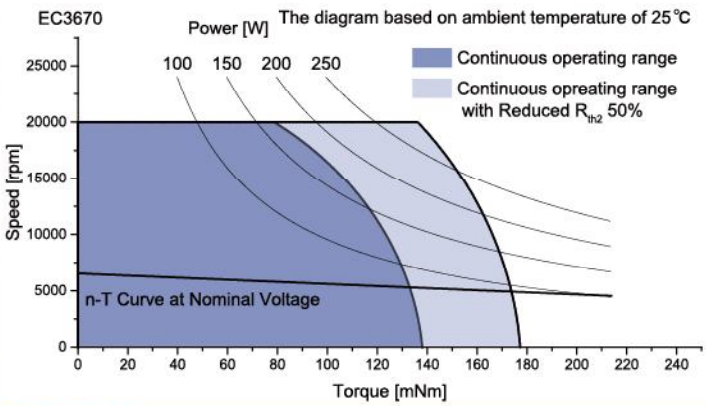
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| | | Sensorless EC3670L-... / With hall sensor EC3670S-... | | 1206 | 2406 | 3606 | 4806 |
|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | |
| **Values at nominal voltage** | | | | | | | |
| 1 | Nominal voltage | V | | 12 | 24 | 36 | 48 |
| 2 | No load speed | rpm | | 6578 | 6555 | 6675 | 6545 |
| 3 | No load current | mA | | 293 | 137 | 101 | 78 |
| 4 | Nominal speed | rpm | | 5300 | 5391 | 5455 | 5401 |
| 5 | Nominal torque | mNm | | 120 | 120 | 120 | 120 |
| 6 | Nominal current | A | | 7.24 | 3.59 | 2.45 | 1.81 |
| 7 | Stall torque | mNm | | 618 | 676 | 657 | 687 |
| 8 | Stall current | A | | 36 | 19.6 | 12.9 | 9.96 |
| 9 | Max. efficiency | % | | 82.8 | 84 | 83.1 | 83.1 |
| 10 | Terminal resistance | Ω | | 0.33 | 1.22 | 2.78 | 4.82 |
| 11 | Terminal inductance | mH | | 0.09 | 0.38 | 0.85 | 1.52 |
| 12 | Torque constant | mNm/A | | 17.3 | 34.7 | 51.1 | 69.5 |
| 13 | Speed constant | rpm/V | | 553 | 275 | 187 | 137 |
| 14 | Speed/torque gradient | rpm/mNm | | 10.7 | 9.7 | 10.2 | 9.53 |
| 15 | Mechanical time constant | ms | | 2.4 | 2.2 | 2.3 | 2.1 |
| 16 | Rotor inertia | gcm^2 | | 21.5 | 21.5 | 21.5 | 21.5 |
| 17 | Thermal resistance housing-ambient | | 3.5 K/W | | | | |
| 18 | Thermal resistance winding-housing | | 0.9 K/W | | | | |
| 19 | Thermal time constant winding | | 14.3 s | | | | |
| 20 | Thermal time constant motor | | 558 s | | | | |
| 21 | Ambient temprature | | -30...+100°C | | | | |
| 22 | Max. permissible winding temperature | | +150°C | | | | |
| 23 | Max. permissible speed | | 20000 rpm | | | | |
| 24 | Axial play at axial load | <8 N | 0 mm | | | | |
| | | >8 N | max. 0.3 mm | | | | |
| 25 | Radial play | | preloaded | | | | |
| 26 | Max. axial load (dynamic) | | 7.5 N | | | | |
| 27 | Max.force for press fits (static) | | 100 N | | | | |
| | (static, shaft supported) | | 2700 N | | | | |
| 28 | Max. radial loading, 5mm from flange | | 25 N | | | | |
| 29 | Number of pole pairs | | 1 | | | | |
| 30 | Number of phases | | 3 | | | | |
| 31 | Weight of motor | | 331 g | | | | |

**Operating Range**




**Connection**

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

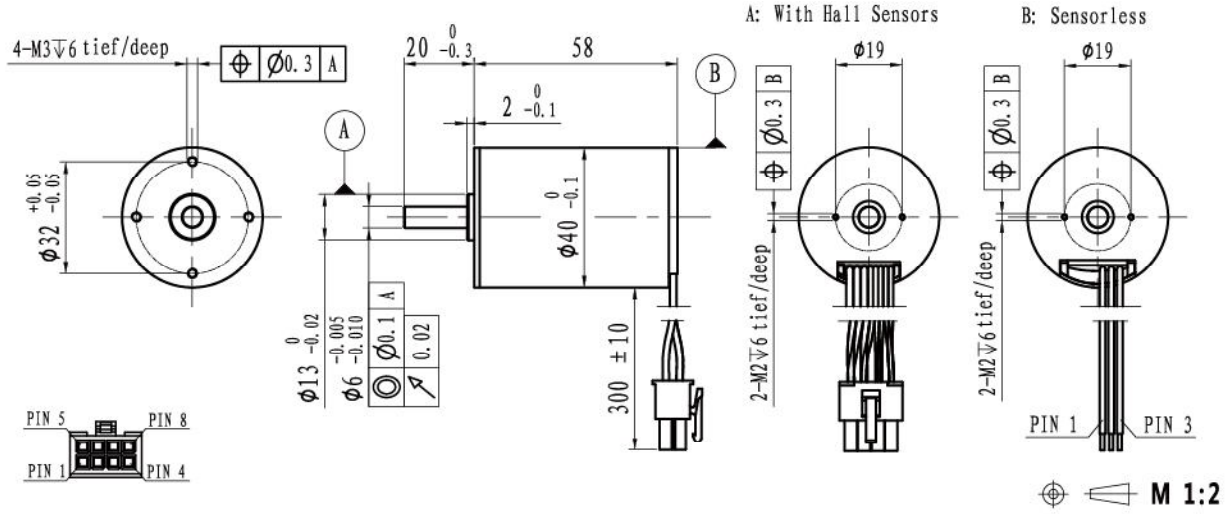
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

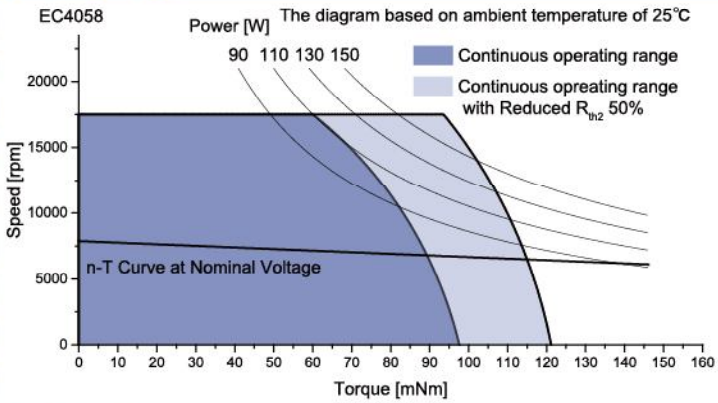
**Configuration**

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| | Sensorless<br>With hall sensor | | EC4058L-...<br>EC4058S-... | 1208 | 2408 | 3608 | 4808 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | | |
| 1 | Nominal voltage | | V | 12 | 24 | 36 | 48 | | | | |
| 2 | No load speed | | rpm | 7958 | 7890 | 7962 | 8001 | | | | |
| 3 | No load current | | mA | 480 | 200 | 170 | 110 | | | | |
| 4 | Nominal speed | | rpm | 7000 | 6912 | 6943 | 6986 | | | | |
| 5 | Nominal torque | | mNm | 85 | 85 | 85 | 85 | | | | |
| 6 | Nominal current | | A | 6.44 | 3.15 | 2.16 | 1.61 | | | | |
| 7 | Stall torque | | mNm | 706 | 686 | 664 | 670 | | | | |
| 8 | Stall current | | A | 50 | 24 | 15.7 | 11.9 | | | | |
| 9 | Max. efficiency | | % | 81.4 | 82.6 | 80.3 | 81.7 | | | | |
| 10 | Terminal resistance | | Ω | 0.24 | 1 | 2.29 | 4.03 | | | | |
| 11 | Terminal inductance | | mH | 0.11 | 0.46 | 0.97 | 1.67 | | | | |
| 12 | Torque constant | | mNm/A | 14.3 | 28.8 | 42.7 | 56.8 | | | | |
| 13 | Speed constant | | rpm/V | 670 | 332 | 224 | 168 | | | | |
| 14 | Speed/torque gradient | | rpm/mNm | 11.3 | 11.5 | 12 | 11.9 | | | | |
| 15 | Mechanical time constant | | ms | 3.5 | 3.6 | 3.7 | 3.7 | | | | |
| 16 | Rotor inertia | | gcm^2 | 29.6 | 29.6 | 29.6 | 29.6 | | | | |
| 17 | Thermal resistance housing-ambient | | 4.7 K/W | | | | | | | | |
| 18 | Thermal resistance winding-housing | | 2.2 K/W | | | | | | | | |
| 19 | Thermal time constant winding | | 35 s | | | | | | | | |
| 20 | Thermal time constant motor | | 777 s | | | | | | | | |
| 21 | Ambient temprature | | -30...+100°C | | | | | | | | |
| 22 | Max. permissible winding temperature | | +150°C | | | | | | | | |
| 23 | Max. permissible speed | | 17500 rpm | | | | | | | | |
| 24 | Axial play at axial load | <10N | 0 mm | | | | | | | | |
| | | >10N | max. 0.3 mm | | | | | | | | |
| 25 | Radial play | | preloaded | | | | | | | | |
| 26 | Max. axial load (dynamic) | | 9 N | | | | | | | | |
| 27 | Max.force for press fits (static) | | 170 N | | | | | | | | |
| | (static, shaft supported) | | 4500 N | | | | | | | | |
| 28 | Max. radial loading, 5mm from flange | | 80 N | | | | | | | | |
| 29 | Number of pole pairs | | 1 | | | | | | | | |
| 30 | Number of phases | | 3 | | | | | | | | |
| 31 | Weight of motor | | 338 g | | | | | | | | |

## Operating Range




## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

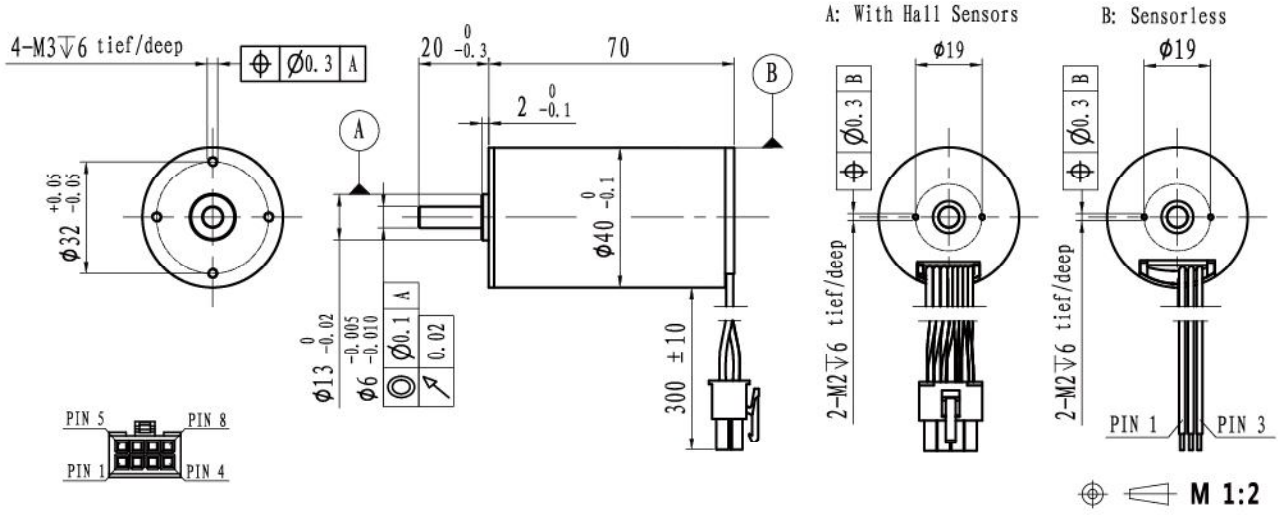
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

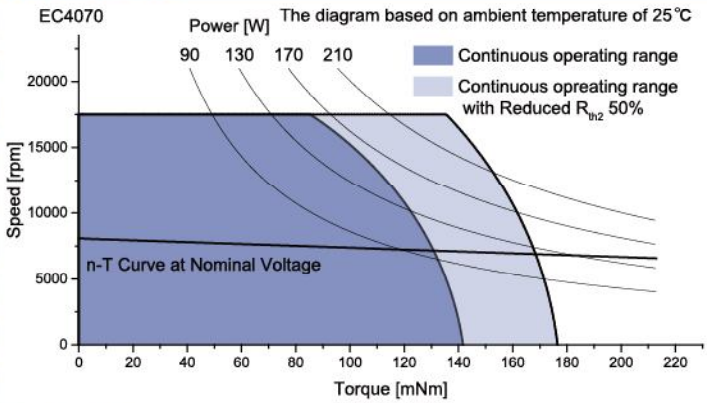
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| | Sensorless<br>With hall sensor | EC4070L-...<br>EC4070S-... | 1206 | 2408 | 3608 | 4808 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Motor data** | | | | | | | | | | |
| **Values at nominal voltage** | | | | | | | | | | |
| 1 | Nominal voltage | V | 12 | 24 | 36 | 48 | | | | |
| 2 | No load speed | rpm | 6154 | 8102 | 8113 | 8061 | | | | |
| 3 | No load current | mA | 264 | 200 | 190 | 130 | | | | |
| 4 | Nominal speed | rpm | 5084 | 7304 | 7266 | 7238 | | | | |
| 5 | Nominal torque | mNm | 130 | 130 | 130 | 130 | | | | |
| 6 | Nominal current | A | 7.29 | 4.82 | 3.28 | 2.43 | | | | |
| 7 | Stall torque | mNm | 748 | 1320 | 1245 | 1273 | | | | |
| 8 | Stall current | A | 40.7 | 47.1 | 29.8 | 22.6 | | | | |
| 9 | Max. efficiency | % | 84.5 | 87.4 | 84.7 | 85.4 | | | | |
| 10 | Terminal resistance | Ω | 0.3 | 0.51 | 1.21 | 2.12 | | | | |
| 11 | Terminal inductance | mH | 0.11 | 0.30 | 0.66 | 1.2 | | | | |
| 12 | Torque constant | mNm/A | 18.5 | 28.2 | 42.1 | 56.5 | | | | |
| 13 | Speed constant | rpm/V | 516 | 339 | 227 | 169 | | | | |
| 14 | Speed/torque gradient | rpm/mNm | 8.23 | 6.14 | 6.52 | 6.33 | | | | |
| 15 | Mechanical time constant | ms | 3.4 | 2.5 | 2.7 | 2.6 | | | | |
| 16 | Rotor inertia | gcm^2 | 39.4 | 39.4 | 39.4 | 39.4 | | | | |
| 17 | Thermal resistance housing-ambient | 3.8 K/W | | | | | | | | |
| 18 | Thermal resistance winding-housing | 1.5 K/W | | | | | | | | |
| 19 | Thermal time constant winding | 33 s | | | | | | | | |
| 20 | Thermal time constant motor | 775 s | | | | | | | | |
| 21 | Ambient temprature | -30...+100°C | | | | | | | | |
| 22 | Max. permissible winding temperature | +150°C | | | | | | | | |
| 23 | Max. permissible speed | 17500 rpm | | | | | | | | |
| 24 | Axial play at axial load <10N | 0 mm | | | | | | | | |
| | >10N | max. 0.3 mm | | | | | | | | |
| 25 | Radial play | preloaded | | | | | | | | |
| 26 | Max. axial load (dynamic) | 9 N | | | | | | | | |
| 27 | Max.force for press fits (static) | 170 N | | | | | | | | |
| | (static, shaft supported) | 4500 N | | | | | | | | |
| 28 | Max. radial loading, 5mm from flange | 80 N | | | | | | | | |
| 29 | Number of pole pairs | 1 | | | | | | | | |
| 30 | Number of phases | 3 | | | | | | | | |
| 31 | Weight of motor | 415 g | | | | | | | | |

## Operating Range




## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

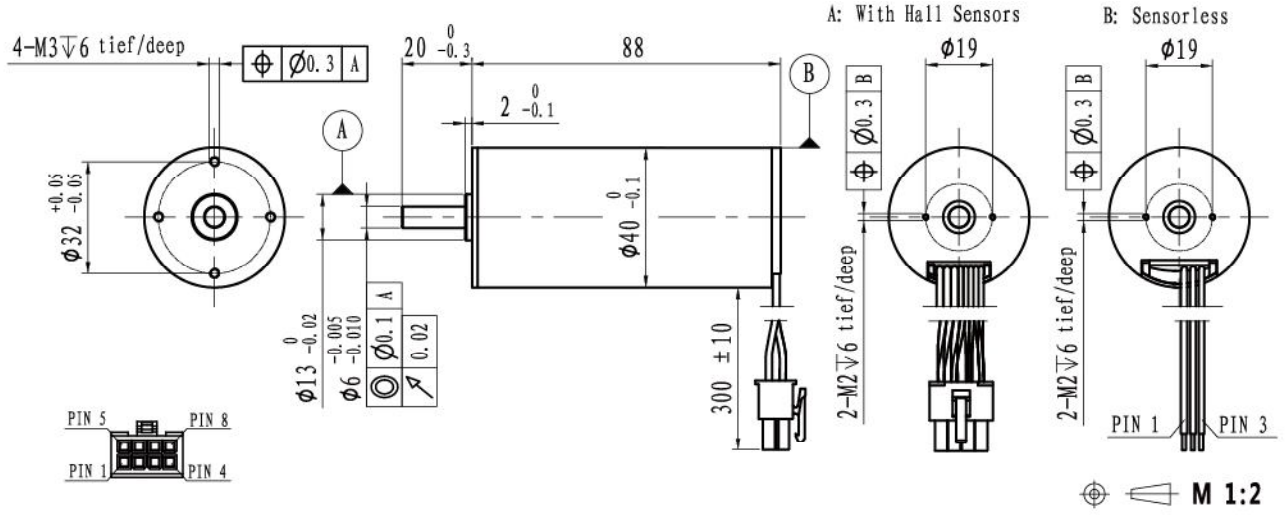
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

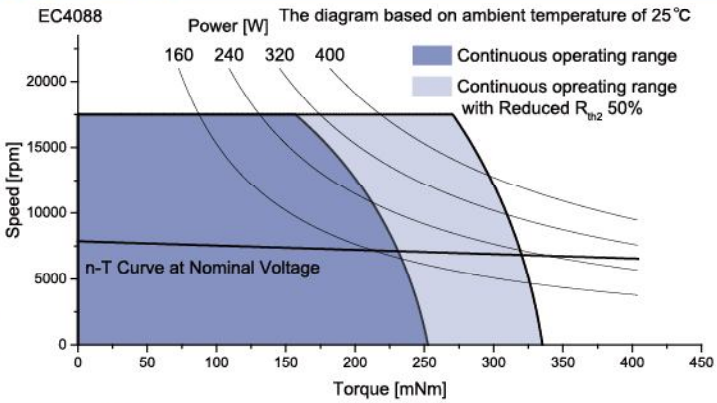
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| | Sensorless<br>With hall sensor | | EC4088L-...<br>EC4088S-... | 2408 | 3608 | 4808 |
|---|---|---|---|---|---|---|
| **Motor data** | | | | | | |
| **Values at nominal voltage** | | | | | | |
| 1 | Nominal voltage | V | | 24 | 36 | 48 |
| 2 | No load speed | rpm | | 7921 | 8032 | 8081 |
| 3 | No load current | mA | | 440 | 290 | 200 |
| 4 | Nominal speed | rpm | | 7299 | 7379 | 7452 |
| 5 | Nominal torque | mNm | | 200 | 200 | 200 |
| 6 | Nominal current | A | | 7.39 | 4.99 | 3.74 |
| 7 | Stall torque | mNm | | 2546 | 2460 | 2570 |
| 8 | Stall current | A | | 88.9 | 58.1 | 45.7 |
| 9 | Max. efficiency | % | | 86.4 | 86.4 | 87.2 |
| 10 | Terminal resistance | Ω | | 0.27 | 0.62 | 1.05 |
| 11 | Terminal inductance | mH | | 0.18 | 0.38 | 0.78 |
| 12 | Torque constant | mNm/A | | 28.8 | 42.6 | 56.5 |
| 13 | Speed constant | rpm/V | | 332 | 224 | 169 |
| 14 | Speed/torque gradient | rpm/mNm | | 3.11 | 3.26 | 3.14 |
| 15 | Mechanical time constant | ms | | 1.8 | 1.9 | 1.8 |
| 16 | Rotor inertia | gcm^2 | | 54.1 | 54.1 | 54.1 |
| 17 | Thermal resistance housing-ambient | 3.0 K/W | | | | |
| 18 | Thermal resistance winding-housing | 0.6 K/W | | | | |
| 19 | Thermal time constant winding | 48 s | | | | |
| 20 | Thermal time constant motor | 996 s | | | | |
| 21 | Ambient temprature | -30...+100°C | | | | |
| 22 | Max. permissible winding temperature | +150°C | | | | |
| 23 | Max. permissible speed | 17500 rpm | | | | |
| 24 | Axial play at axial load <10N | 0 mm | | | | |
| | >10N | max. 0.3 mm | | | | |
| 25 | Radial play | preloaded | | | | |
| 26 | Max. axial load (dynamic) | 9 N | | | | |
| 27 | Max.force for press fits (static) | 170 N | | | | |
| | (static, shaft supported) | 4500 N | | | | |
| 28 | Max. radial loading, 5mm from flange | 80 N | | | | |
| 29 | Number of pole pairs | 1 | | | | |
| 30 | Number of phases | 3 | | | | |
| 31 | Weight of motor | 571 g | | | | |

## Operating Range




## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HB | AWG26 | Green |

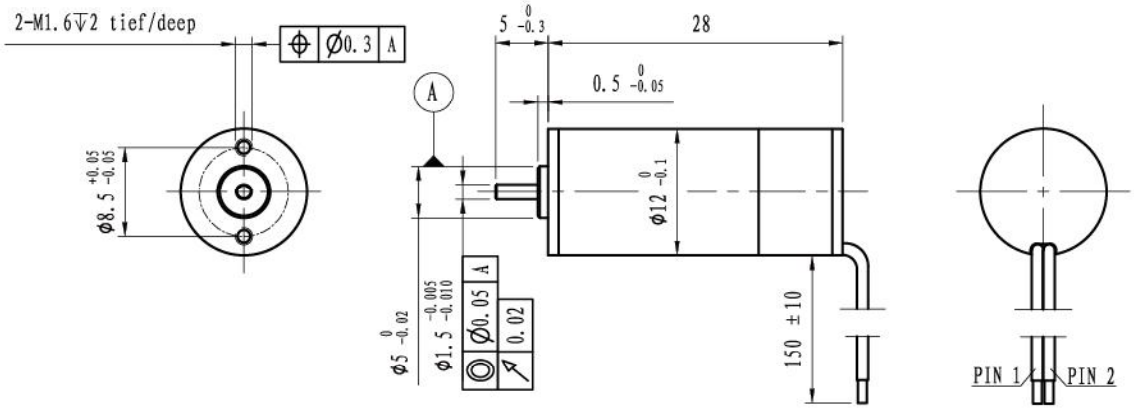
Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

## Configuration

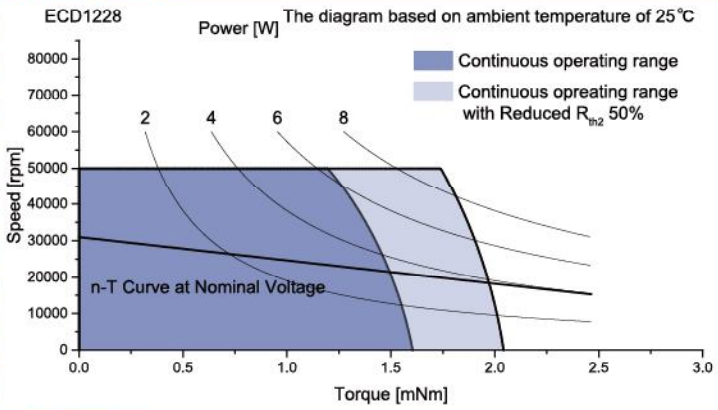
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1.5:1

| Sensorless ECD1228L-... | | 0631 |
|---|---|---|
| **Motor data** | | |
| **Values at nominal voltage** | | |
| 1 Nominal voltage | V | 6 |
| 2 No load speed | rpm | 31000 |
| 3 No load current | mA | 140 |
| 4 Nominal speed | rpm | 27755 |
| 5 Nominal torque | mNm | 0.5 |
| 6 Nominal current | A | 0.42 |
| 7 Stall torque | mNm | 4.78 |
| 8 Stall current | A | 2.86 |
| 9 Max. efficiency | % | 60.6 |
| 10 Supply voltage +Vcc | V | 4.5..7 |
| 11 Direction of ratation | | CW |
| 12 Torque constant | mNm/A | 1.78 |
| 13 Speed constant | rpm/V | 5374 |
| 14 Speed/torque gradient | rpm/mNm | 6350 |
| 15 Mechanical time constant | ms | 11.3 |
| 16 Rotor inertia | gcm^2 | 0.2 |
| 17 Thermal resistance housing-ambient | 38.3 K/W | |
| 18 Thermal resistance winding-housing | 9.6 K/W | |
| 19 Thermal time constant winding | 5 s | |
| 20 Thermal time constant motor | 196 s | |
| 21 Ambient temprature | -30...+100℃ | |
| 22 Max. permissible winding temperature | +125℃ | |
| 23 Max. permissible speed | 50000 rpm | |
| 24 Axial play at axial load <0.8 N | 0 mm | |
| >0.8 N | max. 0.3 mm | |
| 25 Radial play | preloaded | |
| 26 Max. axial load (dynamic) | 0.3 | |
| 27 Max.force for press fits (static) | 11N | |
| (static, shaft supported) | 200 N | |
| 28 Max. radial loading, 5mm from flange | 4.3 N | |
| 29 Number of pole pairs | 1 | |
| 30 Number of phases | 3 | |
| 31 Weight of motor | 12.2 g | |

**Operating Range**




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 0.5A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105℃ |

**Connection**

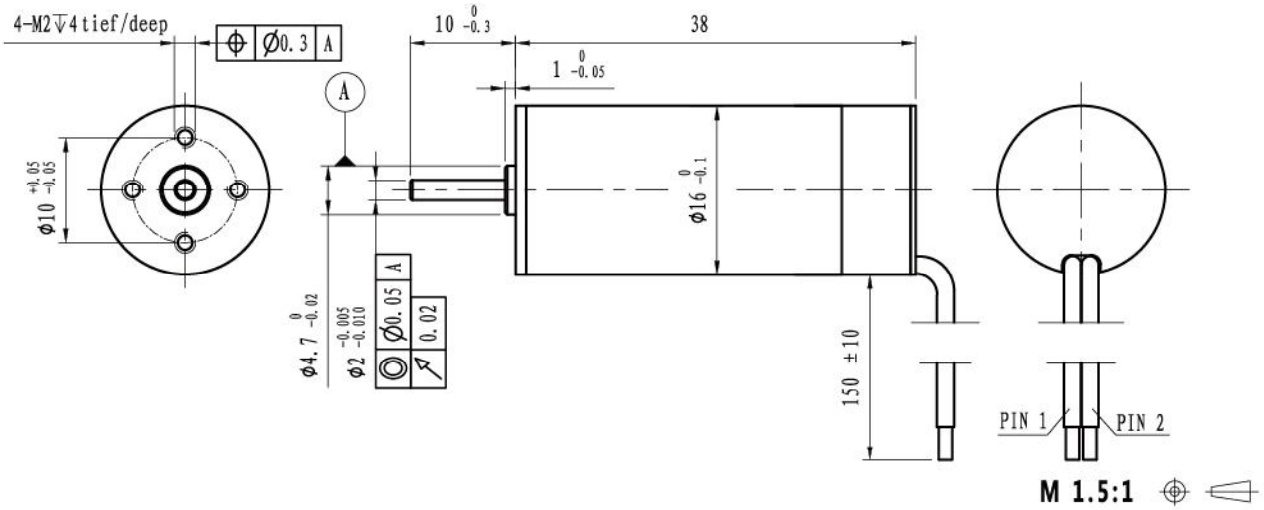
| Conection | | PTFE | |
|---|---|---|---|
| Pin 1 | +VCC | AWG24 | red |
| Pin 2 | GND | AWG24 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

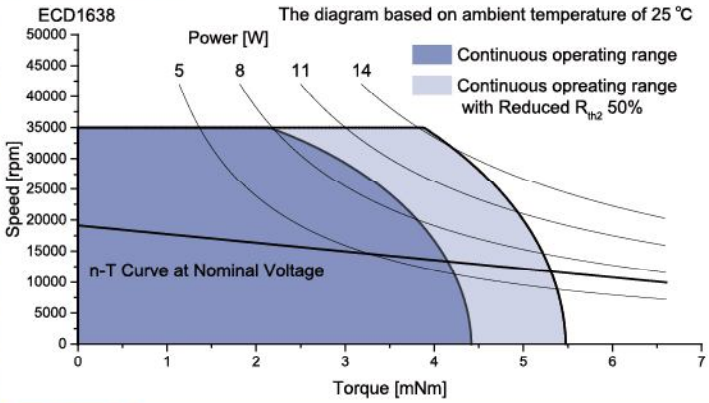
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| Sensorless | ECD1638S-... | | 0608 | 1217 |
|---|---|---|---|---|
| **Motor data** | | | | |
| **Values at nominal voltage** | | | | |
| 1 | Nominal voltage | V | 6 | 12 |
| 2 | No load speed | rpm | 8832 | 17664 |
| 3 | No load current | mA | 110 | 100 |
| 4 | Nominal speed | rpm | 6102 | 14491 |
| 5 | Nominal torque | mNm | 1.5 | 2 |
| 6 | Nominal current | A | 0.37 | 0.43 |
| 7 | Stall torque | mNm | 4.85 | 11.1 |
| 8 | Stall current | A | 0.96 | 1.91 |
| 9 | Max. efficiency | % | 43.7 | 59.5 |
| 10 | Supply voltage +Vcc | V | 4.5..7 | 8..13 |
| 11 | Direction of ratation | | CW | CW |
| 12 | Torque constant | mNm/A | 5.74 | 6.11 |
| 13 | Speed constant | rpm/V | 1664 | 1562 |
| 14 | Speed/torque gradient | rpm/mNm | 1820 | 1604 |
| 15 | Mechanical time constant | ms | 8.2 | 7.2 |
| 16 | Rotor inertia | gcm^2 | 0.4 | 0.4 |
| 17 | Thermal resistance housing-ambient | 20.2 K/W | | |
| 18 | Thermal resistance winding-housing | 8.7 K/W | | |
| 19 | Thermal time constant winding | 7 s | | |
| 20 | Thermal time constant motor | 238 s | | |
| 21 | Ambient temprature | -.30...+100°C | | |
| 22 | Max. permissible winding temperature | +150°C | | |
| 23 | Max. permissible speed | 35000 rpm | | |
| 24 | Axial play at axial load <1.8 N | 0 mm | | |
| | >1.8 N | max. 0.3 mm | | |
| 25 | Radial play | preloaded | | |
| 26 | Max. axial load (dynamic) | 1.3 N | | |
| 27 | Max.force for press fits (static) | 15 N | | |
| | (static, shaft supported) | 350 N | | |
| 28 | Max. radial loading, 5mm from flange | 5 N | | |
| 29 | Number of pole pairs | 1 | | |
| 30 | Number of phases | 3 | | |
| 31 | Weight of motor | 27 g | | |

**Operating Range**




**Controller features**

Sensorless, Open loop, Imax < 0.5A
Overload protection, Stall protection
Max. temperature of electronics +105°C

**Connection**

**Conection**

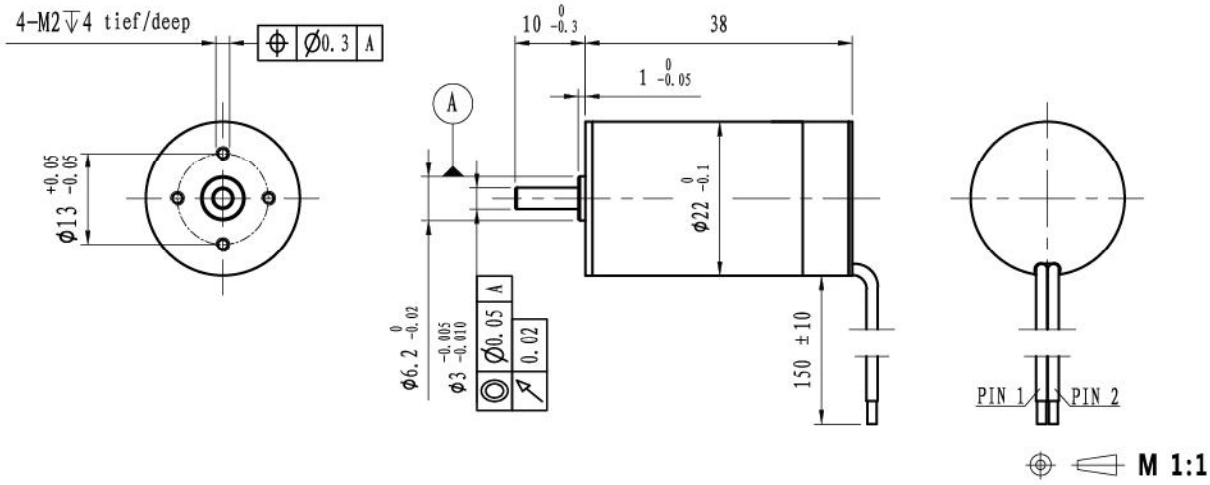
| | | | |
|---|---|---|---|
| Pin 1 | +VCC | PTFE AWG24 | red |
| Pin 2 | GND | AWG24 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

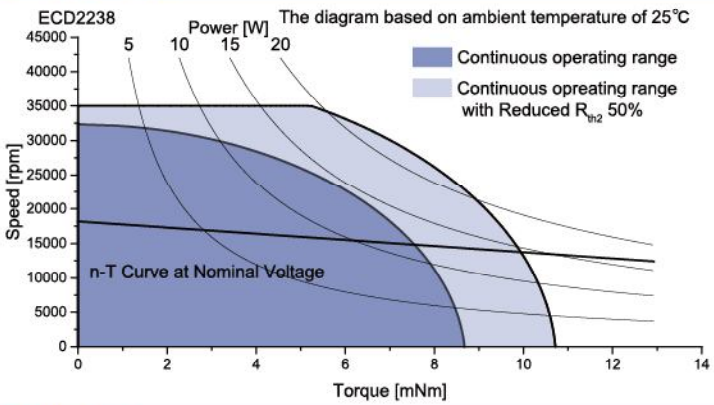
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD2238S-... | | | 1218 | 1818 | 2418 |
|---|---|---|---|---|---|
| **Motor data** | | | | | |
| **Values at nominal voltage** | | | | | |
| 1 | Nominal voltage | V | 12 | 18 | 24 |
| 2 | No load speed | rpm | 17445 | 17830 | 17721 |
| 3 | No load current | mA | 220 | 150 | 110 |
| 4 | Nominal speed | rpm | 14292 | 14700 | 14260 |
| 5 | Nominal torque | mNm | 6 | 6 | 6 |
| 6 | Nominal current | A | 1.13 | 0.75 | 0.57 |
| 7 | Stall torque | mNm | 44.8 | 45.3 | 40.7 |
| 8 | Stall current | A | 7.44 | 4.96 | 3.39 |
| 9 | Max. efficiency | % | 70.2 | 70.3 | 67.7 |
| 10 | Supply voltage +Vcc | V | 10..28 | 10..28 | 10..28 |
| 11 | Direction of ratation | | CW | CW | CW |
| 12 | Torque constant | mNm/A | 6.15 | 9.32 | 12.3 |
| 13 | Speed constant | rpm/V | 1553 | 1024 | 777 |
| 14 | Speed/torque gradient | rpm/mNm | 407 | 399 | 447 |
| 15 | Mechanical time constant | ms | 6.4 | 6.2 | 7.0 |
| 16 | Rotor inertia | gcm^2 | 1.5 | 1.5 | 1.5 |
| 17 | Thermal resistance housing-ambient | 15.2 K/W | | | |
| 18 | Thermal resistance winding-housing | 6.0 K/W | | | |
| 19 | Thermal time constant winding | 11 s | | | |
| 20 | Thermal time constant motor | 383 s | | | |
| 21 | Ambient temprature | -30...+100℃ | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | |
| 23 | Max. permissible speed | 35000 rpm | | | |
| 24 | Axial play at axial load <4 N | 0 mm | | | |
| | >4 N | max. 0.3 mm | | | |
| 25 | Radial play | preloaded | | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | | |
| 27 | Max.force for press fits (static) | 44 N | | | |
| | (static, shaft supported) | 1200 N | | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | | |
| 29 | Number of pole pairs | 1 | | | |
| 30 | Number of phases | 3 | | | |
| 31 | Weight of motor | 63 g | | | |

## Operating Range




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 1.5A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105℃ |

## Connection

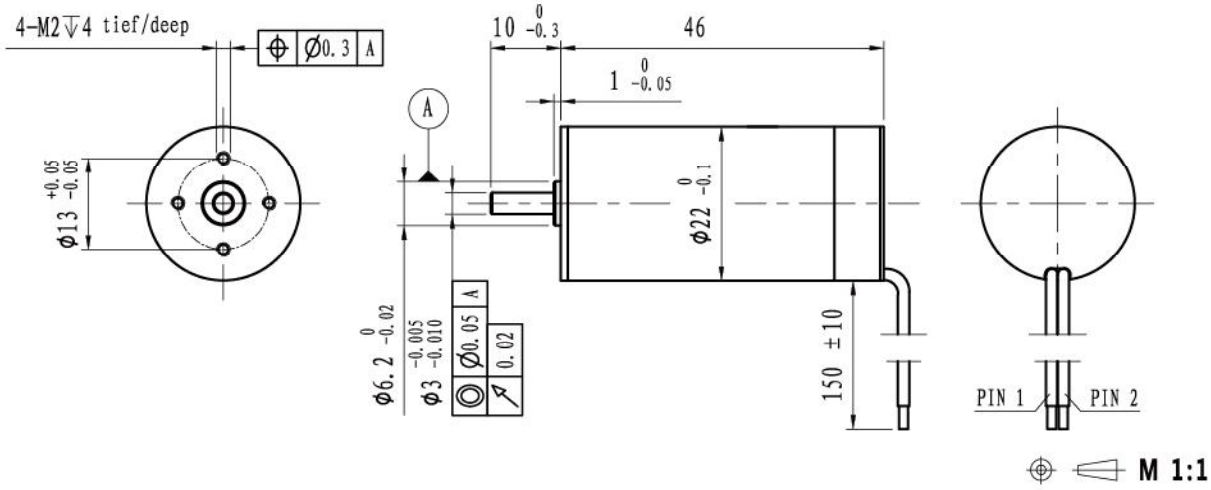
| Conection | | PTFE | |
|---|---|---|---|
| Pin 1 | +VCC | AWG24 | red |
| Pin 2 | GND | AWG24 | black |

**Caution:**
Incorrect lead connection will damage the controller!

## Configuration

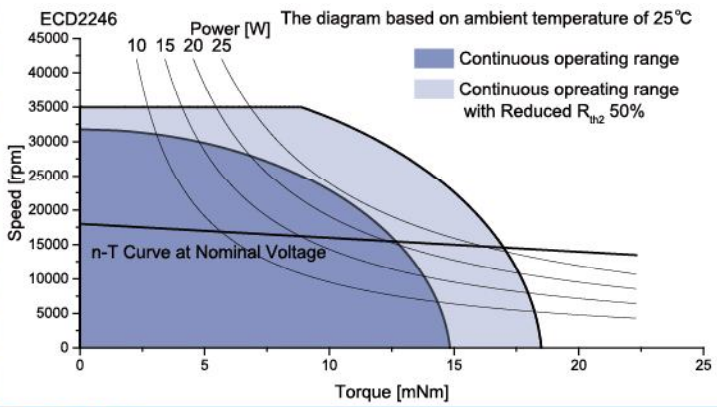
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD2246S-... | | | 1212 | 2416 |
|---|---|---|---|---|
| **Motor data** | | | | |
| **Values at nominal voltage** | | | | |
| 1 | Nominal voltage | V | 12 | 24 |
| 2 | No load speed | rpm | 11570 | 15627 |
| 3 | No load current | mA | 170 | 140 |
| 4 | Nominal speed | rpm | 10085 | 12771 |
| 5 | Nominal torque | mNm | 8 | 12 |
| 6 | Nominal current | A | 1.01 | 1.01 |
| 7 | Stall torque | mNm | 60.4 | 82.8 |
| 8 | Stall current | A | 6.7 | 6.28 |
| 9 | Max. efficiency | % | 70.5 | 71.8 |
| 10 | Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 | Direction of ratation | | CW | CW |
| 12 | Torque constant | mNm/A | 9.2 | 13.4 |
| 13 | Speed constant | rpm/V | 1038 | 712 |
| 14 | Speed/torque gradient | rpm/mNm | 202 | 203 |
| 15 | Mechanical time constant | ms | 4.8 | 4.8 |
| 16 | Rotor inertia | gcm^2 | 2.3 | 2.3 |
| 17 | Thermal resistance housing-ambient | 12.7 K/W | | |
| 18 | Thermal resistance winding-housing | 5.0 K/W | | |
| 19 | Thermal time constant winding | 12 s | | |
| 20 | Thermal time constant motor | 420 s | | |
| 21 | Ambient temprature | -30...+100°C | | |
| 22 | Max. permissible winding temperature | +150°C | | |
| 23 | Max. permissible speed | 35000 rpm | | |
| 24 | Axial play at axial load <4 N | 0 mm | | |
| | >4 N | max. 0.3 mm | | |
| 25 | Radial play | preloaded | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | |
| 27 | Max.force for press fits (static) | 44 N | | |
| | (static, shaft supported) | 1200 N | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | |
| 29 | Number of pole pairs | 1 | | |
| 30 | Number of phases | 3 | | |
| 31 | Weight of motor | 79 g | | |

**Operating Range**




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 1.5A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105°C |

**Connection**

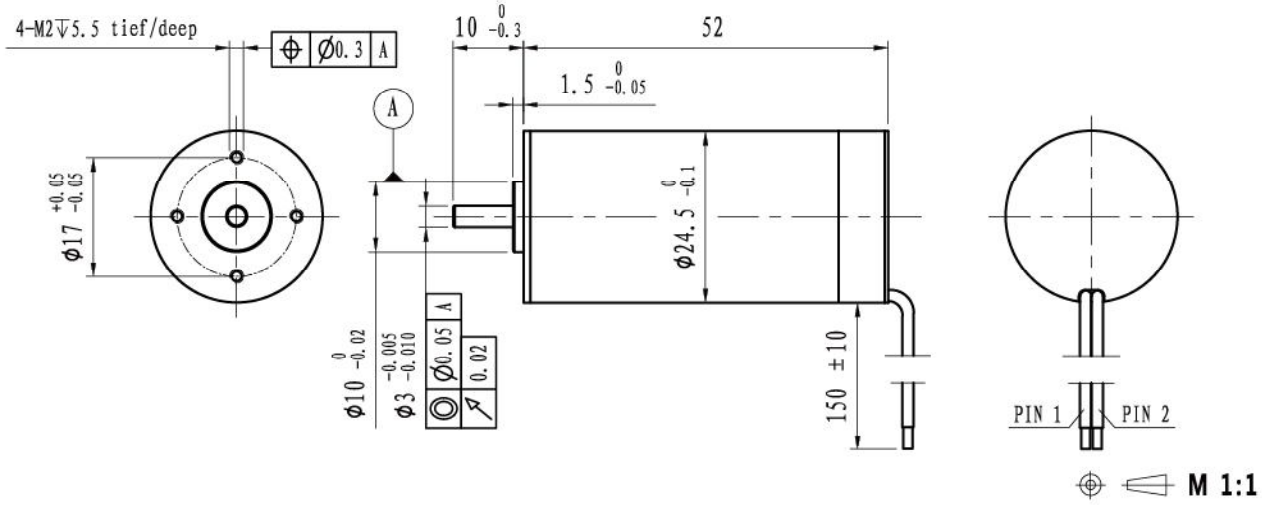
| Conection | | PTFE | |
|---|---|---|---|
| Pin 1 | +VCC | AWG24 | red |
| Pin 2 | GND | AWG24 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

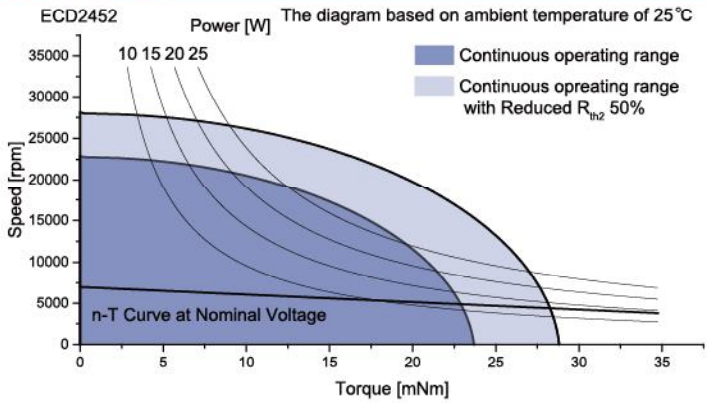
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD2452S-... | | | 1207 | 2407 |
|---|---|---|---|---|
| **Motor data** | | | | |
| **Values at nominal voltage** | | | | |
| 1 | Nominal voltage | V | 12 | 24 |
| 2 | No load speed | rpm | 6904 | 6980 |
| 3 | No load current | mA | 103 | 70 |
| 4 | Nominal speed | rpm | 5087 | 5089 |
| 5 | Nominal torque | mNm | 14 | 14 |
| 6 | Nominal current | A | 0.98 | 0.51 |
| 7 | Stall torque | mNm | 87 | 85.2 |
| 8 | Stall current | A | 5.58 | 2.73 |
| 9 | Max. efficiency | % | 71.7 | 67.9 |
| 10 | Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 | Direction of ratation | | CW | CW |
| 12 | Torque constant | mNm/A | 15.9 | 32 |
| 13 | Speed constant | rpm/V | 601 | 298 |
| 14 | Speed/torque gradient | rpm/mNm | 81.3 | 81.9 |
| 15 | Mechanical time constant | ms | 3.6 | 3.6 |
| 16 | Rotor inertia | gcm^2 | 4.2 | 4.2 |
| 17 | Thermal resistance housing-ambient | 11.6 K/W | | |
| 18 | Thermal resistance winding-housing | 5.6 K/W | | |
| 19 | Thermal time constant winding | 30 s | | |
| 20 | Thermal time constant motor | 557 s | | |
| 21 | Ambient temprature | -30...+100℃ | | |
| 22 | Max. permissible winding temperature | +150℃ | | |
| 23 | Max. permissible speed | 30000 rpm | | |
| 24 | Axial play at axial load <4 N | 0 mm | | |
| | >4 N | max. 0.3 mm | | |
| 25 | Radial play | preloaded | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | |
| 27 | Max.force for press fits (static) | 44 N | | |
| | (static, shaft supported) | 1200 N | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | |
| 29 | Number of pole pairs | 1 | | |
| 30 | Number of phases | 3 | | |
| 31 | Weight of motor | 112 g | | |

**Operating Range**




**Controller features**

Sensor, Open loop, Imax < 1.5A
Overload protection, Stall protection
Max. temperature of electronics +105℃

**Connection**

**Conection** PTFE

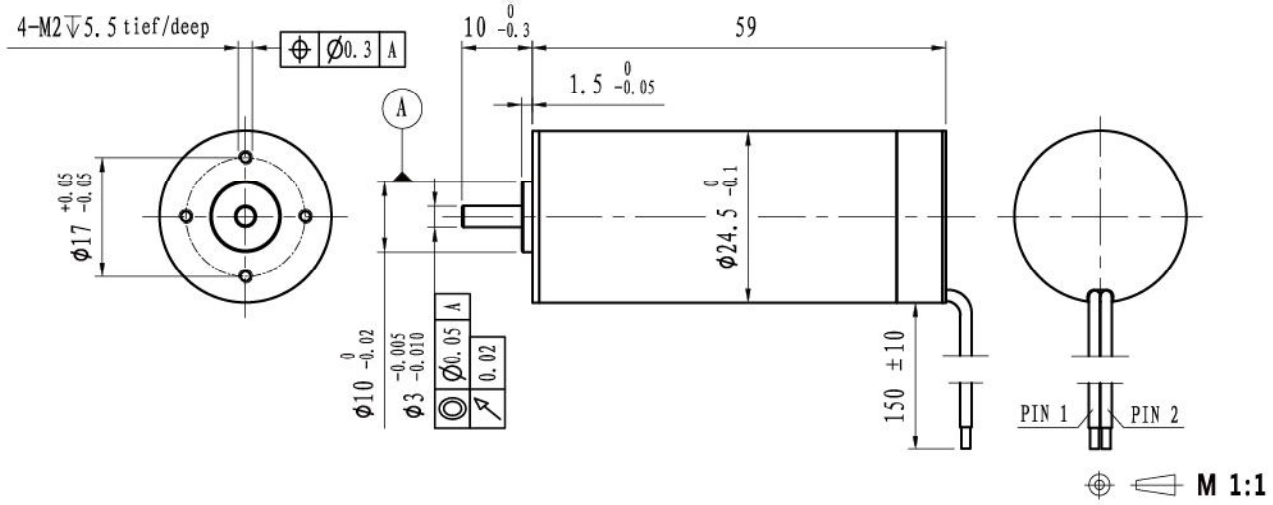
| | | | |
|---|---|---|---|
| Pin 1 | +VCC | AWG24 | red |
| Pin 2 | GND | AWG24 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

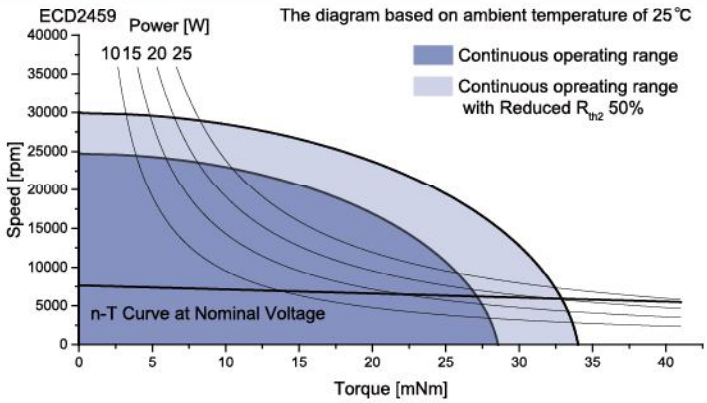
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD2459S-... | | | 1207 | 2407 |
|---|---|---|---|---|
| **Motor data** | | | | |
| **Values at nominal voltage** | | | | |
| 1 | Nominal voltage | V | 12 | 24 |
| 2 | No load speed | rpm | 7699 | 7655 |
| 3 | No load current | mA | 114 | 73 |
| 4 | Nominal speed | rpm | 6958 | 6597 |
| 5 | Nominal torque | mNm | 14 | 20 |
| 6 | Nominal current | A | 1.07 | 0.75 |
| 7 | Stall torque | mNm | 145 | 145 |
| 8 | Stall current | A | 10 | 4.98 |
| 9 | Max. efficiency | % | 79.8 | 77.2 |
| 10 | Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 | Direction of ratation | | CW | CW |
| 12 | Torque constant | mNm/A | 14.7 | 29.5 |
| 13 | Speed constant | rpm/V | 649 | 324 |
| 14 | Speed/torque gradient | rpm/mNm | 52.9 | 52.9 |
| 15 | Mechanical time constant | ms | 3.3 | 3.3 |
| 16 | Rotor inertia | gcm^2 | 5.9 | 5.9 |
| 17 | Thermal resistance housing-ambient | 10.2 K/W | | |
| 18 | Thermal resistance winding-housing | 6.4 K/W | | |
| 19 | Thermal time constant winding | 36 s | | |
| 20 | Thermal time constant motor | 555 s | | |
| 21 | Ambient temprature | -30...+100℃ | | |
| 22 | Max. permissible winding temperature | +150℃ | | |
| 23 | Max. permissible speed | 30000 rpm | | |
| 24 | Axial play at axial load <4 N | 0 mm | | |
| | >4 N | max. 0.3 mm | | |
| 25 | Radial play | preloaded | | |
| 26 | Max. axial load (dynamic) | 3.5 N | | |
| 27 | Max.force for press fits (static) | 44 N | | |
| | (static, shaft supported) | 1200 N | | |
| 28 | Max. radial loading, 5mm from flange | 15 N | | |
| 29 | Number of pole pairs | 1 | | |
| 30 | Number of phases | 3 | | |
| 31 | Weight of motor | 130 g | | |

## Operating Range




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 1.5A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105℃ |

## Connection

**Conection**

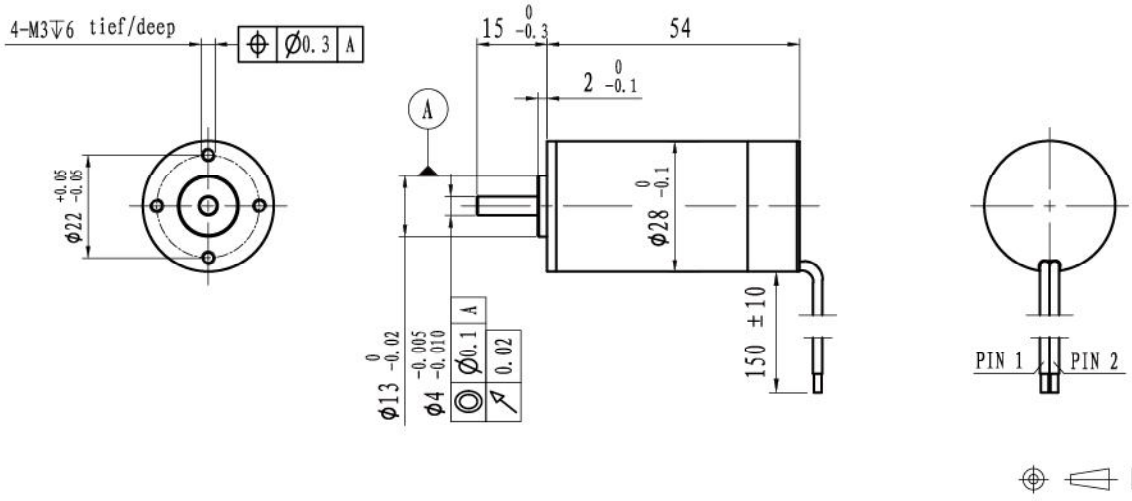
| | | | |
|---|---|---|---|
| Pin 1 | +VCC | PTFE AWG24 | red |
| Pin 2 | GND | AWG24 | black |

**Caution:**
Incorrect lead connection will damage the controller!

## Configuration

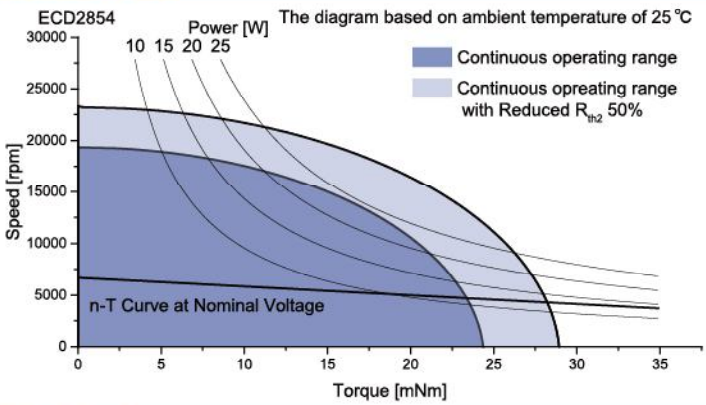
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD2854S-... | | 1206 | 2406 |
|---|---|---|---|
| **Motor data** | | | |
| **Values at nominal voltage** | | | |
| 1 Nominal voltage | V | 12 | 24 |
| 2 No load speed | rpm | 6878 | 6700 |
| 3 No load current | mA | 121 | 76 |
| 4 Nominal speed | rpm | 5674 | 5157 |
| 5 Nominal torque | mNm | 15 | 18 |
| 6 Nominal current | A | 1.04 | 0.62 |
| 7 Stall torque | mNm | 85.7 | 78.1 |
| 8 Stall current | A | 5.38 | 2.43 |
| 9 Max. efficiency | % | 72.3 | 67.8 |
| 10 Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 Direction of ratation | | CW | CW |
| 12 Torque constant | mNm/A | 16.3 | 33.1 |
| 13 Speed constant | rpm/V | 586 | 288 |
| 14 Speed/torque gradient | rpm/mNm | 80.3 | 85.7 |
| 15 Mechanical time constant | ms | 4.4 | 4.7 |
| 16 Rotor inertia | gcm^2 | 5.2 | 5.2 |
| 17 Thermal resistance housing-ambient | 9.6 K/W | | |
| 18 Thermal resistance winding-housing | 6.3 K/W | | |
| 19 Thermal time constant winding | 37 s | | |
| 20 Thermal time constant motor | 584 s | | |
| 21 Ambient temprature | -30...+100°C | | |
| 22 Max. permissible winding temperature | +150°C | | |
| 23 Max. permissible speed | 25000 rpm | | |
| 24 Axial play at axial load <8 N | 0 mm | | |
| >8 N | max. 0.3 mm | | |
| 25 Radial play | preloaded | | |
| 26 Max. axial load (dynamic) | 7.5 N | | |
| 27 Max.force for press fits (static) | 100 N | | |
| (static, shaft supported) | 2000 N | | |
| 28 Max. radial loading, 5mm from flange | 25 N | | |
| 29 Number of pole pairs | 1 | | |
| 30 Number of phases | 3 | | |
| 31 Weight of motor | 153 g | | |

**Operating Range**




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 1.8A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105°C |

**Connection**

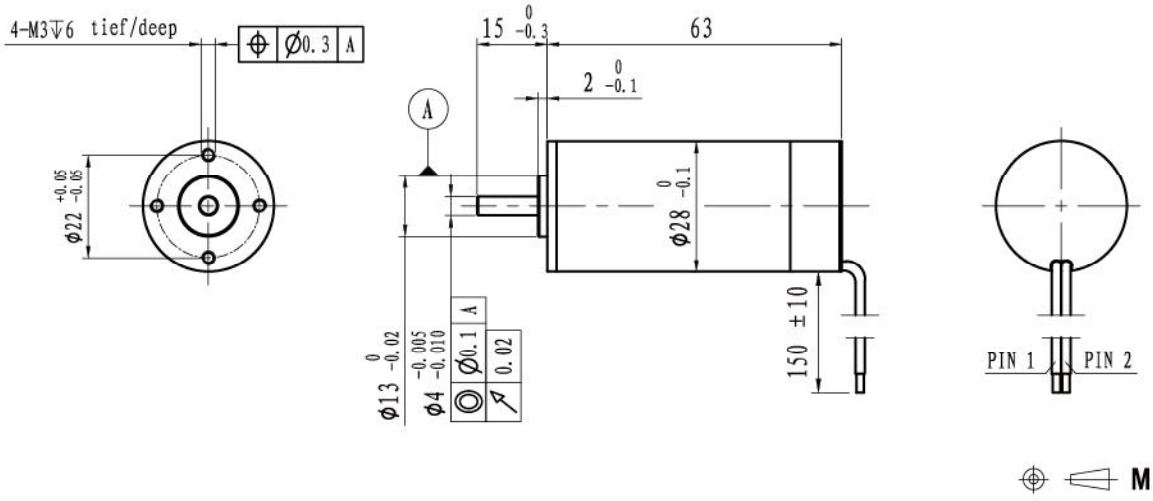
| Conection | | | |
|---|---|---|---|
| Pin 1 | +VCC | PTFE AWG20 | red |
| Pin 2 | GND | AWG20 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

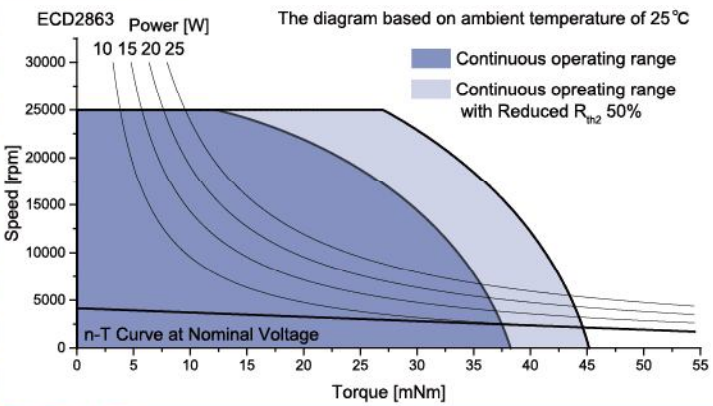
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD2863S-... | | | 1204 | 2404 |
|---|---|---|---|---|
| **Motor data** | | | | |
| **Values at nominal voltage** | | | | |
| 1 | Nominal voltage | V | 12 | 24 |
| 2 | No load speed | rpm | 4168 | 4163 |
| 3 | No load current | mA | 70 | 60 |
| 4 | Nominal speed | rpm | 3264 | 3033 |
| 5 | Nominal torque | mNm | 25 | 25 |
| 6 | Nominal current | A | 0.99 | 0.53 |
| 7 | Stall torque | mNm | 115 | 92.1 |
| 8 | Stall current | A | 4.33 | 1.79 |
| 9 | Max. efficiency | % | 76.2 | 66.7 |
| 10 | Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 | Direction of ratation | | CW | CW |
| 12 | Torque constant | mNm/A | 27 | 53.2 |
| 13 | Speed constant | rpm/V | 353 | 179 |
| 14 | Speed/torque gradient | rpm/mNm | 36.2 | 45.2 |
| 15 | Mechanical time constant | ms | 3.2 | 4.0 |
| 16 | Rotor inertia | gcm^2 | 8.5 | 8.5 |
| 17 | Thermal resistance housing-ambient | 7.1 K/W | | |
| 18 | Thermal resistance winding-housing | 5 K/W | | |
| 19 | Thermal time constant winding | 51 s | | |
| 20 | Thermal time constant motor | 552 s | | |
| 21 | Ambient temprature | -30...+100°C | | |
| 22 | Max. permissible winding temperature | +150°C | | |
| 23 | Max. permissible speed | 25000 rpm | | |
| 24 | Axial play at axial load <8 N | 0 mm | | |
| | >8 N | max. 0.3 mm | | |
| 25 | Radial play | preloaded | | |
| 26 | Max. axial load (dynamic) | 7.5 N | | |
| 27 | Max.force for press fits (static) | 100 N | | |
| | (static, shaft supported) | 2000 N | | |
| 28 | Max. radial loading, 5mm from flange | 25 N | | |
| 29 | Number of pole pairs | 1 | | |
| 30 | Number of phases | 3 | | |
| 31 | Weight of motor | 188 g | | |

**Operating Range**




**Controller features**

Sensor, Open loop, Imax < 1.8A
Overload protection, Stall protection
Max. temperature of electronics +105°C

**Connection**

**Conection**

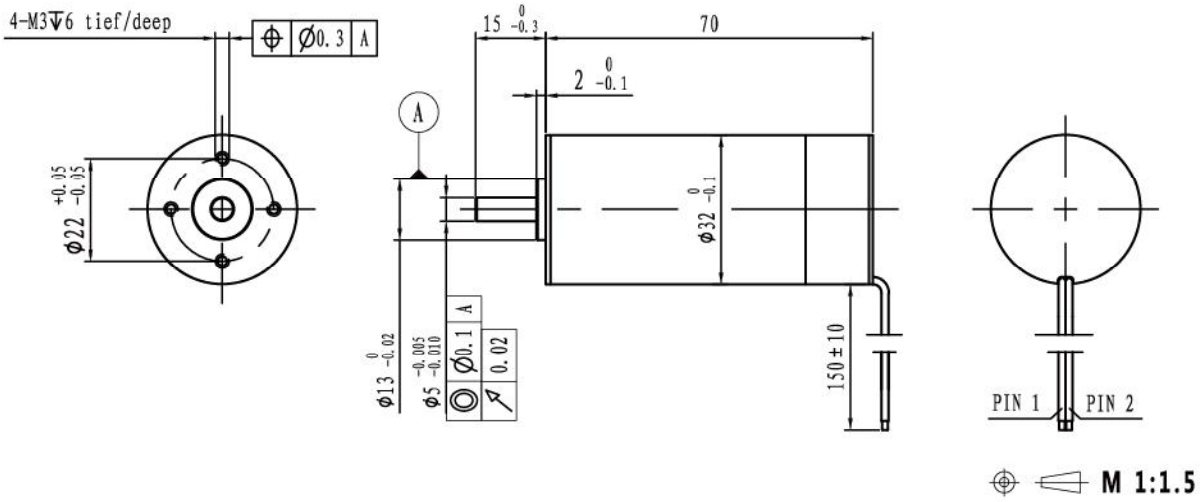
| | | | |
|---|---|---|---|
| Pin 1 | +VCC | PTFE AWG20 | red |
| Pin 2 | GND | AWG20 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

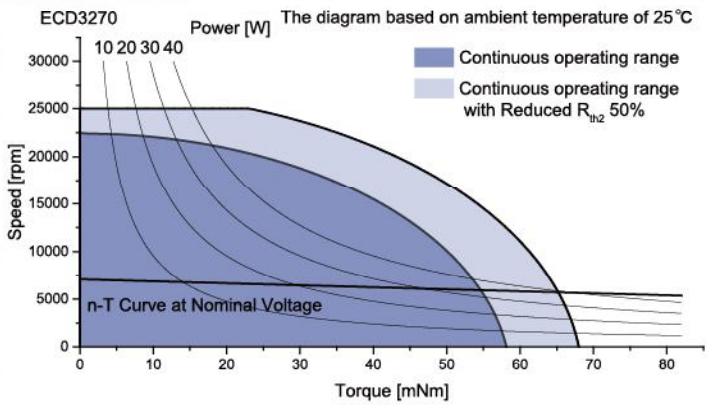
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD3270S-... | | 1207 | 2407 |
|---|---|---|---|
| **Motor data** | | | |
| **Values at nominal voltage** | | | |
| 1 Nominal voltage | V | 12 | 24 |
| 2 No load speed | rpm | 7200 | 7100 |
| 3 No load current | mA | 194 | 110 |
| 4 Nominal speed | rpm | 6623 | 6243 |
| 5 Nominal torque | mNm | 25 | 40 |
| 6 Nominal current | A | 1.78 | 1.36 |
| 7 Stall torque | mNm | 312 | 331 |
| 8 Stall current | A | 20 | 10.5 |
| 9 Max. efficiency | % | 81.3 | 80.6 |
| 10 Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 Direction of ratation | | CW | CW |
| 12 Torque constant | mNm/A | 15.8 | 31.9 |
| 13 Speed constant | rpm/V | 606 | 299 |
| 14 Speed/torque gradient | rpm/mNm | 23.1 | 21.4 |
| 15 Mechanical time constant | ms | 3.7 | 3.5 |
| 16 Rotor inertia | gcm^2 | 15.5 | 15.5 |
| 17 Thermal resistance housing-ambient | 5 K/W | | |
| 18 Thermal resistance winding-housing | 4 K/W | | |
| 19 Thermal time constant winding | 52 s | | |
| 20 Thermal time constant motor | 540 s | | |
| 21 Ambient temprature | -30...+100℃ | | |
| 22 Max. permissible winding temperature | +150℃ | | |
| 23 Max. permissible speed | 25000 rpm | | |
| 24 Axial play at axial load <8 N | 0 mm | | |
| >8 N | max. 0.3 mm | | |
| 25 Radial play | preloaded | | |
| 26 Max. axial load (dynamic) | 7.5 N | | |
| 27 Max.force for press fits (static) | 100 N | | |
| (static, shaft supported) | 2700 N | | |
| 28 Max. radial loading, 5mm from flange | 25 N | | |
| 29 Number of pole pairs | 1 | | |
| 30 Number of phases | 3 | | |
| 31 Weight of motor | 255 g | | |

**Operating Range**




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 2.2A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105℃ |

**Connection**

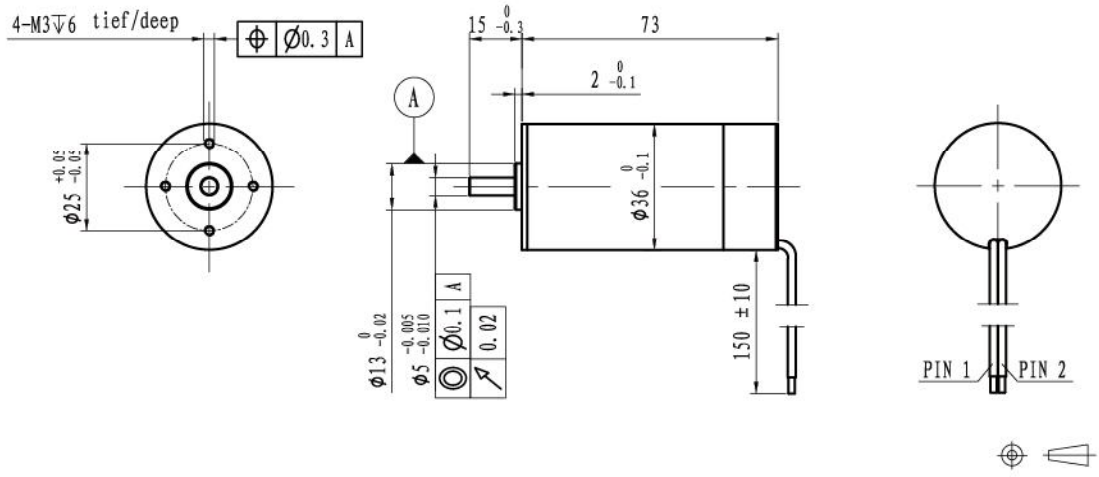
| Conection | | | |
|---|---|---|---|
| Pin 1 | +VCC | PTFE AWG20 | red |
| Pin 2 | GND | AWG20 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

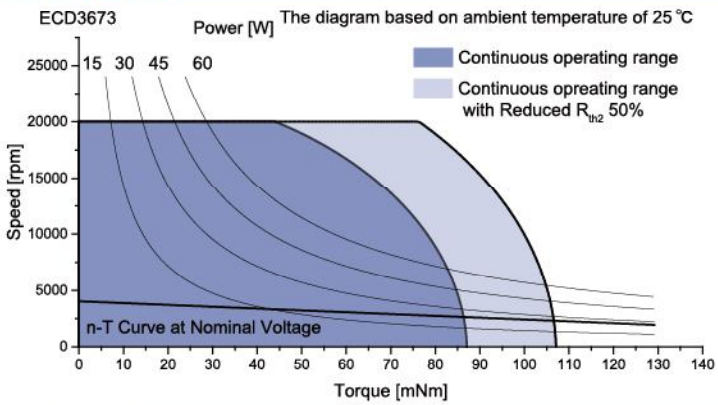
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD3673S-... | | 1204 | 2404 |
|---|---|---|---|
| **Motor data** | | | |
| **Values at nominal voltage** | | | |
| 1 Nominal voltage | V | 12 | 24 |
| 2 No load speed | rpm | 4070 | 4042 |
| 3 No load current | mA | 148 | 84 |
| 4 Nominal speed | rpm | 3229 | 3223 |
| 5 Nominal torque | mNm | 50 | 50 |
| 6 Nominal current | A | 1.95 | 0.98 |
| 7 Stall torque | mNm | 242 | 247 |
| 8 Stall current | A | 8.89 | 4.52 |
| 9 Max. efficiency | % | 75.9 | 74.6 |
| 10 Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 Direction of ratation | | CW | CW |
| 12 Torque constant | mNm/A | 27.7 | 55.7 |
| 13 Speed constant | rpm/V | 345 | 172 |
| 14 Speed/torque gradient | rpm/mNm | 16.8 | 16.4 |
| 15 Mechanical time constant | ms | 3.4 | 3.3 |
| 16 Rotor inertia | gcm^2 | 19.5 | 19.5 |
| 17 Thermal resistance housing-ambient | 4.9 K/W | | |
| 18 Thermal resistance winding-housing | 1.6 K/W | | |
| 19 Thermal time constant winding | 45 s | | |
| 20 Thermal time constant motor | 630 s | | |
| 21 Ambient temprature | -30...+100°C | | |
| 22 Max. permissible winding temperature | +150°C | | |
| 23 Max. permissible speed | 20000 rpm | | |
| 24 Axial play at axial load <8 N | 0 mm | | |
| >8 N | max. 0.3 mm | | |
| 25 Radial play | preloaded | | |
| 26 Max. axial load (dynamic) | 7.5 N | | |
| 27 Max.force for press fits (static) | 100 N | | |
| (static, shaft supported) | 2700 N | | |
| 28 Max. radial loading, 5mm from flange | 25 N | | |
| 29 Number of pole pairs | 1 | | |
| 30 Number of phases | 3 | | |
| 31 Weight of motor | 317 g | | |

**Operating Range**




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 4A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105°C |

**Connection**

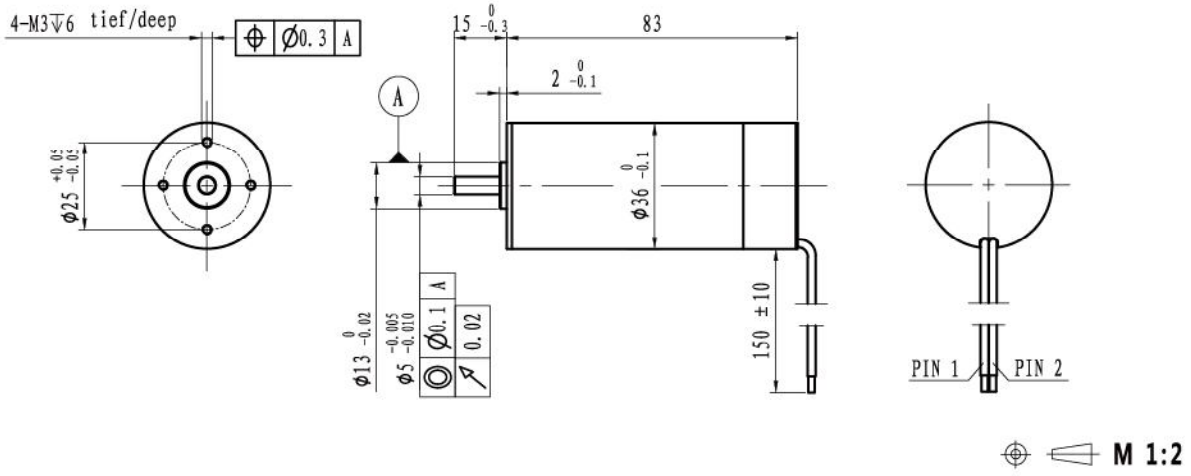
| Conection | | | |
|---|---|---|---|
| Pin 1 | +VCC | PTFE AWG20 | red |
| Pin 2 | GND | AWG20 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

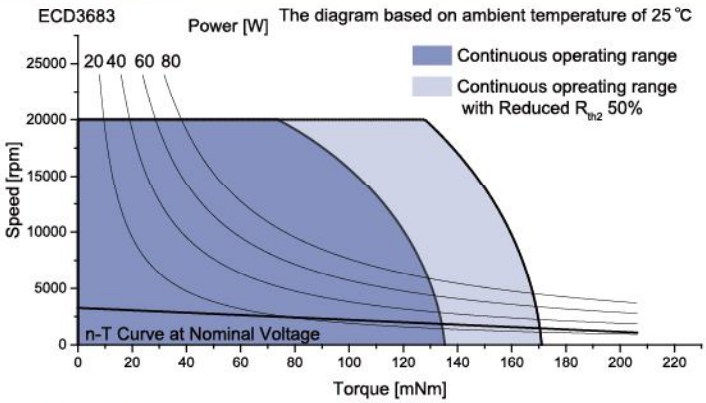
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| With hall sensor ECD3683S-... | | 1203 | 2403 |
|---|---|---|---|
| **Motor data** | | | |
| **Values at nominal voltage** | | | |
| 1 Nominal voltage | V | 12 | 24 |
| 2 No load speed | rpm | 3278 | 3273 |
| 3 No load current | mA | 137 | 78 |
| 4 Nominal speed | rpm | 2294 | 2304 |
| 5 Nominal torque | mNm | 100 | 100 |
| 6 Nominal current | A | 3.04 | 1.53 |
| 7 Stall torque | mNm | 333 | 338 |
| 8 Stall current | A | 9.8 | 4.98 |
| 9 Max. efficiency | % | 77.8 | 76.5 |
| 10 Supply voltage +Vcc | V | 10..28 | 10..28 |
| 11 Direction of ratation | | CW | CW |
| 12 Torque constant | mNm/A | 34.5 | 68.9 |
| 13 Speed constant | rpm/V | 277 | 139 |
| 14 Speed/torque gradient | rpm/mNm | 9.83 | 9.69 |
| 15 Mechanical time constant | ms | 2.2 | 2.2 |
| 16 Rotor inertia | gcm^2 | 21.5 | 21.5 |
| 17 Thermal resistance housing-ambient | 5 K/W | | |
| 18 Thermal resistance winding-housing | 2.3 K/W | | |
| 19 Thermal time constant winding | 46 s | | |
| 20 Thermal time constant motor | 816 s | | |
| 21 Ambient temprature | -30...+100℃ | | |
| 22 Max. permissible winding temperature | +150℃ | | |
| 23 Max. permissible speed | 20000 rpm | | |
| 24 Axial play at axial load <8 N | 0 mm | | |
| >8 N | max. 0.3 mm | | |
| 25 Radial play | preloaded | | |
| 26 Max. axial load (dynamic) | 7.5 N | | |
| 27 Max.force for press fits (static) | 100 N | | |
| (static, shaft supported) | 2700 N | | |
| 28 Max. radial loading, 5mm from flange | 25 N | | |
| 29 Number of pole pairs | 1 | | |
| 30 Number of phases | 3 | | |
| 31 Weight of motor | 366 g | | |

**Operating Range**




| Controller features | |
|---|---|
| Sensor, Open loop, Imax < 4A | |
| Overload protection, Stall protection | |
| Max. temperature of electronics | +105℃ |

**Connection**

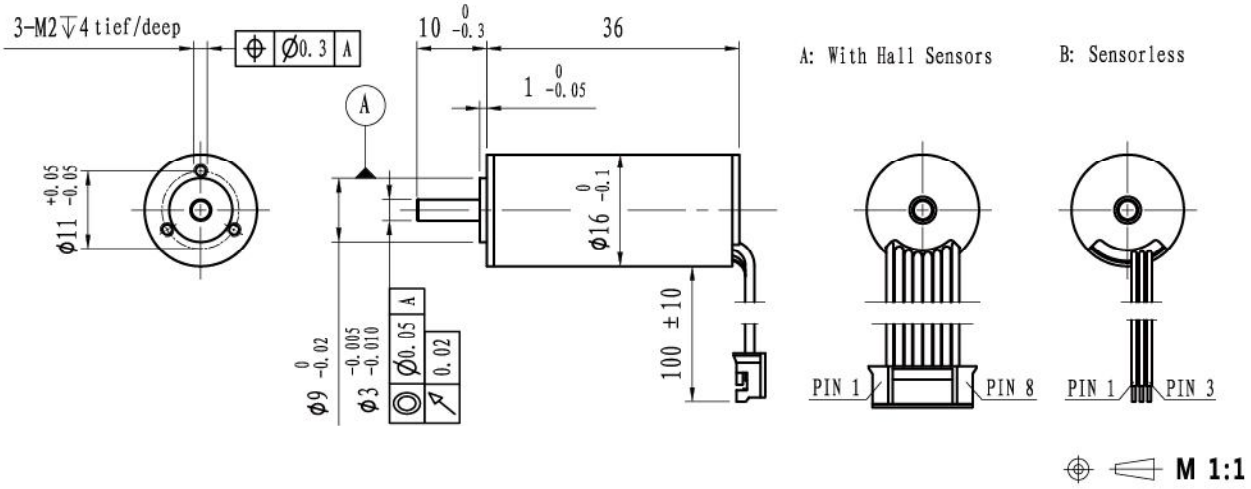
| Conection | | PTFE | |
|---|---|---|---|
| Pin 1 | +VCC | AWG20 | red |
| Pin 2 | GND | AWG20 | black |

**Caution:**
Incorrect lead connection will damage the controller!

**Configuration**

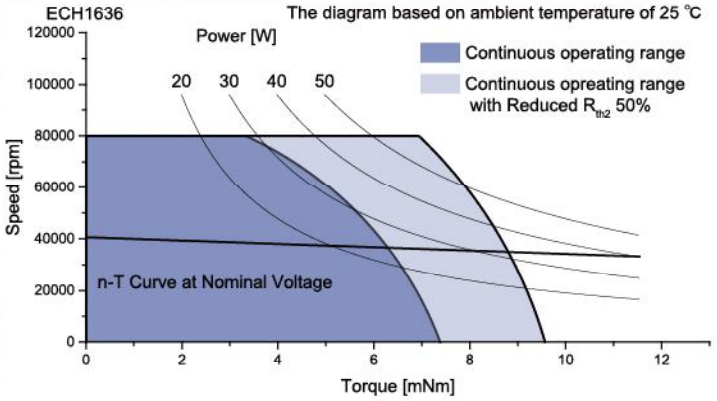
Function: On&Off/Direction/Speed control/Brake
Speed closed&open-loop Control/Speed feedback
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE

More :
Please contact our sales engineers




| | Sensorless ECH1636L-... / With hall sensor ECH1636S-... | | 2440 | 3040 | 3640 |
|---|---|---|---|---|---|
| **Motor data** | | | | | |
| **Values at nominal voltage** | | | | | |
| 1 | Nominal voltage | V | 24 | 30 | 36 |
| 2 | No load speed | rpm | 40273 | 40225 | 40760 |
| 3 | No load current | mA | 90 | 77 | 72 |
| 4 | Nominal speed | rpm | 37067 | 36958 | 37406 |
| 5 | Nominal torque | mNm | 5 | 5 | 5 |
| 6 | Nominal current | A | 0.98 | 0.79 | 0.67 |
| 7 | Stall torque | mNm | 62.8 | 61.6 | 60.8 |
| 8 | Stall current | A | 11.2 | 8.8 | 7.35 |
| 9 | Max. efficiency | % | 82.9 | 82.2 | 81.2 |
| 10 | Terminal resistance | Ω | 2.14 | 3.41 | 4.9 |
| 11 | Terminal inductance | mH | 0.11 | 0.17 | 0.24 |
| 12 | Torque constant | mNm/A | 5.65 | 7.06 | 8.35 |
| 13 | Speed constant | rpm/V | 1692 | 1353 | 1143 |
| 14 | Speed/torque gradient | rpm/mNm | 641 | 653 | 671 |
| 15 | Mechanical time constant | ms | 3.7 | 3.8 | 3.9 |
| 16 | Rotor inertia | gcm^2 | 0.55 | 0.55 | 0.55 |
| 17 | Thermal resistance housing-ambient | 18.6 K/W | | | |
| 18 | Thermal resistance winding-housing | 3.44 K/W | | | |
| 19 | Thermal time constant winding | 6 s | | | |
| 20 | Thermal time constant motor | 298 s | | | |
| 21 | Ambient temprature | -30...+100℃ | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | |
| 23 | Max. permissible speed | 80000 rpm | | | |
| 24 | Axial play at axial load <3 N | 0 mm | | | |
| | >3 N | max. 0.3 mm | | | |
| 25 | Radial play | preloaded | | | |
| 26 | Max. axial load (dynamic) | 2.5 N | | | |
| 27 | Max.force for press fits (static) | 44 N | | | |
| | (static, shaft supported) | 1200 N | | | |
| 28 | Max. radial loading, 5mm from flange | 11 N | | | |
| 29 | Number of pole pairs | 1 | | | |
| 30 | Number of phases | 3 | | | |
| 31 | Weight of motor | 32 g | | | |

## Operating Range



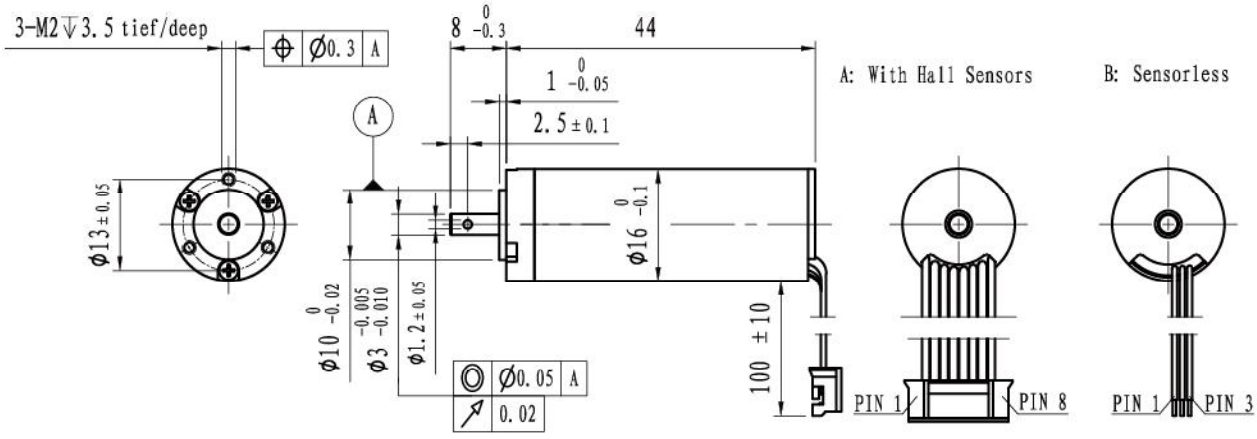

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

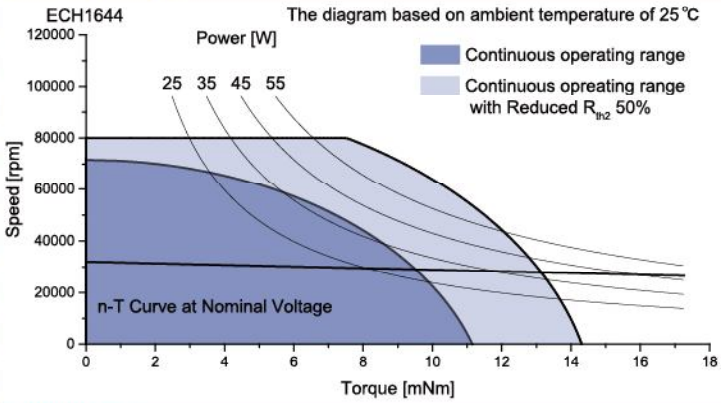
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1

| Sensorless ECH1644L-... / With hall sensor ECH1644S-... | | | 2430 | 3040 | 3640 |
|---|---|---|---|---|---|
| **Motor data** | | | | | |
| **Values at nominal voltage** | | | | | |
| 1 | Nominal voltage | V | 24 | 30 | 36 |
| 2 | No load speed | rpm | 30580 | 30900 | 30160 |
| 3 | No load current | mA | 95 | 80 | 76 |
| 4 | Nominal speed | rpm | 28134 | 28403 | 27632 |
| 5 | Nominal torque | mNm | 7.5 | 7.5 | 7.5 |
| 6 | Nominal current | A | 1.1 | 0.9 | 0.74 |
| 7 | Stall torque | mNm | 93.8 | 92.8 | 89.5 |
| 8 | Stall current | A | 12.7 | 10.2 | 8 |
| 9 | Max. efficiency | % | 83.4 | 83 | 81.5 |
| 10 | Terminal resistance | Ω | 1.89 | 2.95 | 4.5 |
| 11 | Terminal inductance | mH | 0.12 | 0.19 | 0.28 |
| 12 | Torque constant | mNm/A | 7.44 | 9.2 | 11.3 |
| 13 | Speed constant | rpm/V | 1284 | 1038 | 846 |
| 14 | Speed/torque gradient | rpm/mNm | 326 | 333 | 337 |
| 15 | Mechanical time constant | ms | 2.8 | 2.9 | 2.9 |
| 16 | Rotor inertia | gcm^2 | 0.82 | 0.82 | 0.82 |
| 17 | Thermal resistance housing-ambient | 16.2 K/W | | | |
| 18 | Thermal resistance winding-housing | 3.5 K/W | | | |
| 19 | Thermal time constant winding | 4 s | | | |
| 20 | Thermal time constant motor | 339 s | | | |
| 21 | Ambient temprature | -30...+100℃ | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | |
| 23 | Max. permissible speed | 80000 rpm | | | |
| 24 | Axial play at axial load <3 N | 0 mm | | | |
| | >3 N | max. 0.3 mm | | | |
| 25 | Radial play | preloaded | | | |
| 26 | Max. axial load (dynamic) | 2.5 N | | | |
| 27 | Max.force for press fits (static) | 44 N | | | |
| | (static, shaft supported) | 1200 N | | | |
| 28 | Max. radial loading, 5mm from flange | 11 N | | | |
| 29 | Number of pole pairs | 1 | | | |
| 30 | Number of phases | 3 | | | |
| 31 | Weight of motor | 43g | | | |

## Operating Range



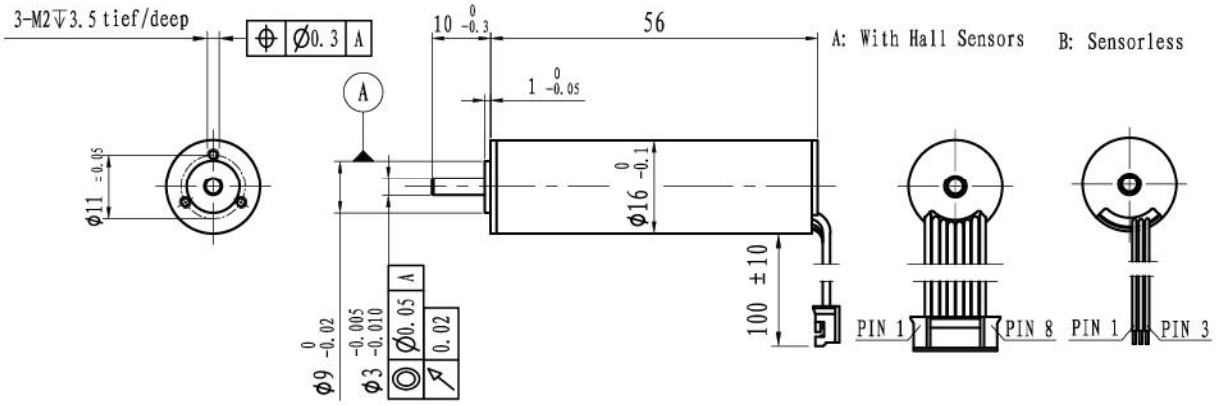

## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST PH2.0-8P | | | |

| | | | |
|---|---|---|---|
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

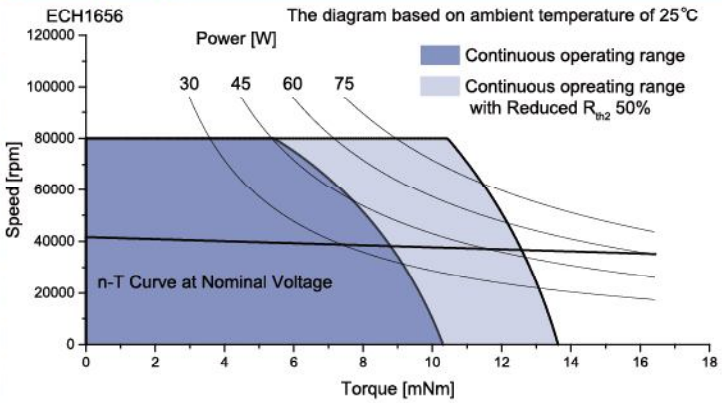
Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




M 1:1.2

| Sensorless ECH1656L-... / With hall sensor ECH1656S-... | | | 2440 | 3040 | 3640 |
|---|---|---|---|---|---|
| **Motor data** | | | | | |
| **Values at nominal voltage** | | | | | |
| 1 | Nominal voltage | V | 24 | 30 | 36 |
| 2 | No load speed | rpm | 41670 | 40775 | 41311 |
| 3 | No load current | mA | 103 | 89 | 79 |
| 4 | Nominal speed | rpm | 39232 | 38438 | 38898 |
| 5 | Nominal torque | mNm | 6 | 6 | 6 |
| 6 | Nominal current | A | 1.2 | 0.95 | 0.8 |
| 7 | Stall torque | mNm | 103 | 105 | 103 |
| 8 | Stall current | A | 18.9 | 15.1 | 12.5 |
| 9 | Max. efficiency | % | 85.8 | 85.2 | 84.7 |
| 10 | Terminal resistance | Ω | 1.27 | 1.99 | 2.88 |
| 11 | Terminal inductance | mH | 0.09 | 0.14 | 0.2 |
| 12 | Torque constant | mNm/A | 5.47 | 6.98 | 8.27 |
| 13 | Speed constant | rpm/V | 1746 | 1367 | 1155 |
| 14 | Speed/torque gradient | rpm/mNm | 406 | 390 | 402 |
| 15 | Mechanical time constant | ms | 2.6 | 2.5 | 2.6 |
| 16 | Rotor inertia | gcm^2 | 0.61 | 0.61 | 0.61 |
| 17 | Thermal resistance housing-ambient | 16.2 K/W | | | |
| 18 | Thermal resistance winding-housing | 1.9 K/W | | | |
| 19 | Thermal time constant winding | 5 s | | | |
| 20 | Thermal time constant motor | 397 s | | | |
| 21 | Ambient temprature | -30...+100°C | | | |
| 22 | Max. permissible winding temperature | +150°C | | | |
| 23 | Max. permissible speed | 80000 rpm | | | |
| 24 | Axial play at axial load <3 N | 0 mm | | | |
| | >3 N | max. 0.3 mm | | | |
| 25 | Radial play | preloaded | | | |
| 26 | Max. axial load (dynamic) | 2.5 N | | | |
| 27 | Max.force for press fits (static) | 44 N | | | |
| | (static, shaft supported) | 1200 N | | | |
| 28 | Max. radial loading, 5mm from flange | 11 N | | | |
| 29 | Number of pole pairs | 1 | | | |
| 30 | Number of phases | 3 | | | |
| 31 | Weight of motor | 50 g | | | |

## Operating Range

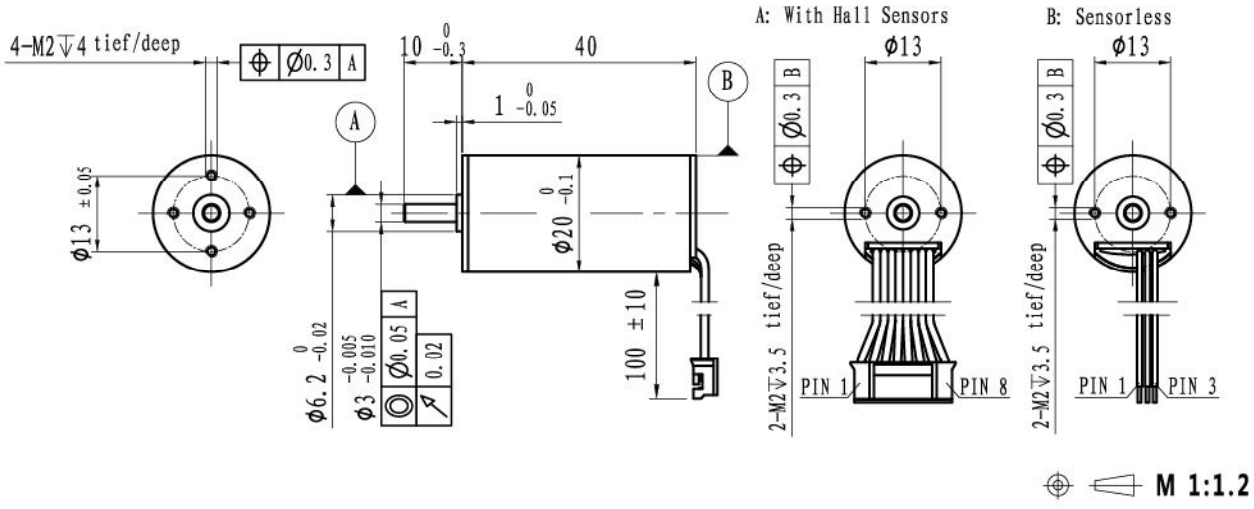



## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST | PH2.0-8P | | |
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

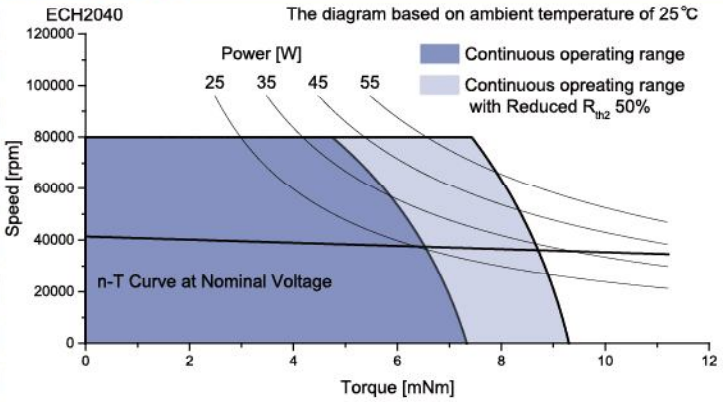
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| Sensorless ECH2040L-... / With hall sensor ECH2040S-... | | | 2440 | 3040 | 3640 |
|---|---|---|---|---|---|
| **Motor data** | | | | | |
| **Values at nominal voltage** | | | | | |
| 1 | Nominal voltage | V | 24 | 30 | 36 |
| 2 | No load speed | rpm | 41392 | 40700 | 40020 |
| 3 | No load current | mA | 69 | 60 | 55 |
| 4 | Nominal speed | rpm | 37500 | 36777 | 36049 |
| 5 | Nominal torque | mNm | 6.3 | 6.3 | 6.3 |
| 6 | Nominal current | A | 1.21 | 0.96 | 0.79 |
| 7 | Stall torque | mNm | 67 | 65.4 | 63.5 |
| 8 | Stall current | A | 12.2 | 9.4 | 7.5 |
| 9 | Max. efficiency | % | 85.5 | 84.7 | 83.6 |
| 10 | Terminal resistance | Ω | 1.96 | 3.19 | 4.8 |
| 11 | Terminal inductance | mH | 0.21 | 0.47 | 0.47 |
| 12 | Torque constant | mNm/A | 5.51 | 6.99 | 8.53 |
| 13 | Speed constant | rpm/V | 1734 | 1365 | 1120 |
| 14 | Speed/torque gradient | rpm/mNm | 618 | 623 | 630 |
| 15 | Mechanical time constant | ms | 4.5 | 4.5 | 4.6 |
| 16 | Rotor inertia | gcm^2 | 0.69 | 0.69 | 0.69 |
| 17 | Thermal resistance housing-ambient | 18.7 K/W | | | |
| 18 | Thermal resistance winding-housing | 1.9 K/W | | | |
| 19 | Thermal time constant winding | 5 s | | | |
| 20 | Thermal time constant motor | 397 s | | | |
| 21 | Ambient temprature | -30...+100℃ | | | |
| 22 | Max. permissible winding temperature | +150℃ | | | |
| 23 | Max. permissible speed | 80000 rpm | | | |
| 24 | Axial play at axial load <3 N | 0 mm | | | |
| | >3 N | max. 0.3 mm | | | |
| 25 | Radial play | preloaded | | | |
| 26 | Max. axial load (dynamic) | 2.5 N | | | |
| 27 | Max.force for press fits (static) | 44 N | | | |
| | (static, shaft supported) | 1200 N | | | |
| 28 | Max. radial loading, 5mm from flange | 11 N | | | |
| 29 | Number of pole pairs | 1 | | | |
| 30 | Number of phases | 3 | | | |
| 31 | Weight of motor | 53 g | | | |

## Operating Range

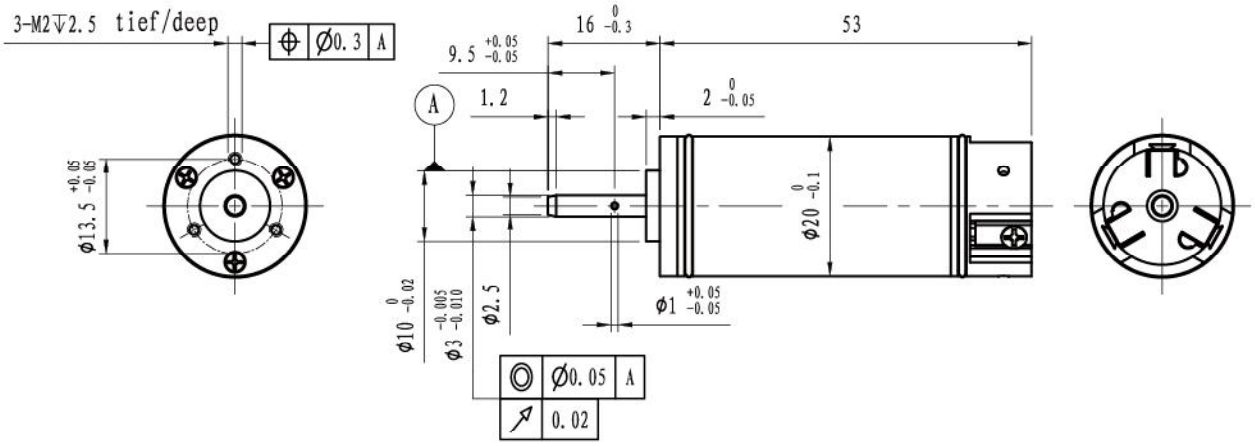



## Connection

| | | | |
|---|---|---|---|
| **Conection A (Sensor)** | | PVC | |
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |
| Conector | | | |
| JST | PH2.0-8P | | |
| **Conection B (Sensorless)** | | PVC | |
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

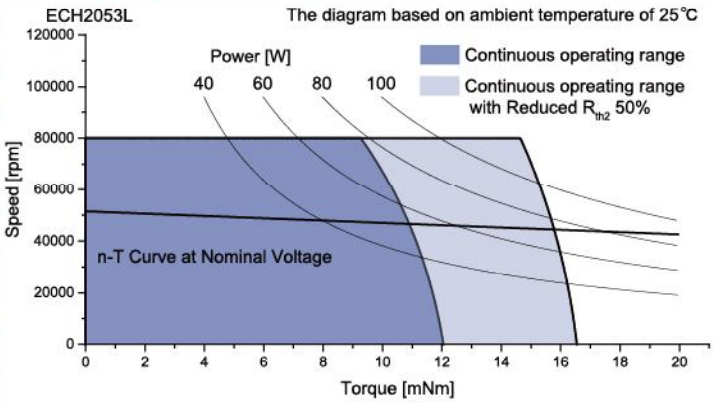
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimension/length
Connector: JST/MOLEX/TE




| Sensorless | EC2053L-... | 1850 | 2450 | 3650 | 4850 |
|---|---|---|---|---|---|
| **Motor data** | | | | | |
| **Values at nominal voltage** | | | | | |
| 1 Nominal voltage | V | 18 | 24 | 36 | 48 |
| 2 No load speed | rpm | 50202 | 50832 | 51448 | 50700 |
| 3 No load current | mA | 136 | 107 | 81 | 68 |
| 4 Nominal speed | rpm | 45684 | 46379 | 46936 | 46188 |
| 5 Nominal torque | mNm | 10 | 10 | 10 | 10 |
| 6 Nominal current | A | 3.07 | 2.33 | 1.58 | 1.18 |
| 7 Stall torque | mNm | 111 | 114 | 114 | 112 |
| 8 Stall current | A | 32.7 | 25.5 | 17.2 | 12.6 |
| 9 Max. efficiency | % | 87.5 | 87.5 | 86.8 | 85.8 |
| 10 Terminal resistance | Ω | 0.55 | 0.94 | 2.09 | 3.82 |
| 11 Terminal inductance | mH | 0.06 | 0.10 | 0.23 | 0.38 |
| 12 Torque constant | mNm/A | 3.41 | 4.49 | 6.65 | 8.99 |
| 13 Speed constant | rpm/V | 2801 | 2127 | 1436 | 1062 |
| 14 Speed/torque gradient | rpm/mNm | 452 | 445 | 451 | 451 |
| 15 Mechanical time constant | ms | 3.9 | 3.9 | 3.9 | 3.9 |
| 16 Rotor inertia | gcm^2 | 0.83 | 0.83 | 0.83 | 0.83 |
| 17 Thermal resistance housing-ambient | 11.8 K/W | | | | |
| 18 Thermal resistance winding-housing | 0.8 K/W | | | | |
| 19 Thermal time constant winding | 2 s | | | | |
| 20 Thermal time constant motor | 386 s | | | | |
| 21 Ambient temprature | -30...+100℃ | | | | |
| 22 Max. permissible winding temperature | +150℃ | | | | |
| 23 Max. permissible speed | 80000 rpm | | | | |
| 24 Axial play at axial load <3 N | 0 mm | | | | |
| >3 N | max. 0.3 mm | | | | |
| 25 Radial play | preloaded | | | | |
| 26 Max. axial load (dynamic) | 2.5 N | | | | |
| 27 Max.force for press fits (static) | 44 N | | | | |
| (static, shaft supported) | 1200 N | | | | |
| 28 Max. radial loading, 5mm from flange | 11 N | | | | |
| 29 Number of pole pairs | 1 | | | | |
| 30 Number of phases | 3 | | | | |
| 31 Weight of motor | 63 g | | | | |

## Operating Range

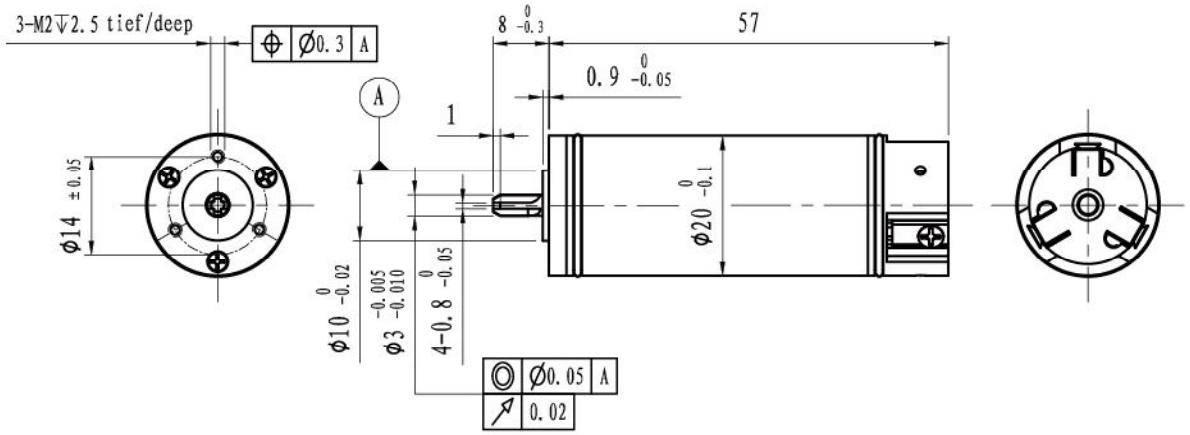



## Connection

**Conection**
specical connector
please contact sales engineer

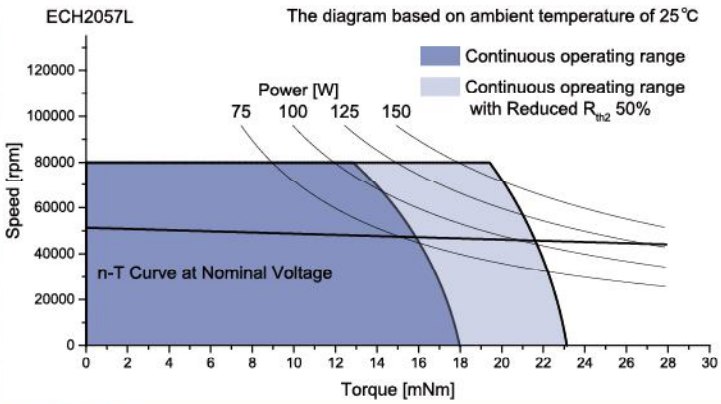
## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft




| Sensorless | EC2057L-... | 1850 | 2450 | 3650 | 4850 |
|---|---|---|---|---|---|
| **Motor data** | | | | | |
| **Values at nominal voltage** | | | | | |
| 1 Nominal voltage | V | 18 | 24 | 36 | 48 |
| 2 No load speed | rpm | 50202 | 50832 | 51286 | 50700 |
| 3 No load current | mA | 210 | 158 | 113 | 94 |
| 4 Nominal speed | rpm | 46263 | 46714 | 47328 | 46436 |
| 5 Nominal torque | mNm | 15 | 15 | 15 | 15 |
| 6 Nominal current | A | 4.61 | 3.5 | 2.36 | 1.76 |
| 7 Stall torque | mNm | 191 | 185 | 194 | 178 |
| 8 Stall current | A | 56.3 | 41.4 | 29.2 | 19.9 |
| 9 Max. efficiency | % | 88.2 | 88 | 87.9 | 86.7 |
| 10 Terminal resistance | Ω | 0.32 | 0.58 | 1.23 | 2.41 |
| 11 Terminal inductance | mH | 0.04 | 0.06 | 0.14 | 0.25 |
| 12 Torque constant | mNm/A | 3.41 | 4.49 | 6.68 | 9 |
| 13 Speed constant | rpm/V | 2799 | 2126 | 1430 | 1061 |
| 14 Speed/torque gradient | rpm/mNm | 263 | 275 | 264 | 284 |
| 15 Mechanical time constant | ms | 2.5 | 2.6 | 2.5 | 2.7 |
| 16 Rotor inertia | gcm^2 | 0.91 | 0.91 | 0.91 | 0.91 |
| 17 Thermal resistance housing-ambient | 7.6 K/W | | | | |
| 18 Thermal resistance winding-housing | 1.6 K/W | | | | |
| 19 Thermal time constant winding | 5 s | | | | |
| 20 Thermal time constant motor | 410 s | | | | |
| 21 Ambient temprature | -30...+100℃ | | | | |
| 22 Max. permissible winding temperature | +150℃ | | | | |
| 23 Max. permissible speed | 80000 rpm | | | | |
| 24 Axial play at axial load <3 N | 0 mm | | | | |
| >3 N | max. 0.3 mm | | | | |
| 25 Radial play | preloaded | | | | |
| 26 Max. axial load (dynamic) | 2.5 N | | | | |
| 27 Max.force for press fits (static) | 44 N | | | | |
| (static, shaft supported) | 1200 N | | | | |
| 28 Max. radial loading, 5mm from flange | 11 N | | | | |
| 29 Number of pole pairs | 1 | | | | |
| 30 Number of phases | 3 | | | | |
| 31 Weight of motor | 69 g | | | | |

## Operating Range

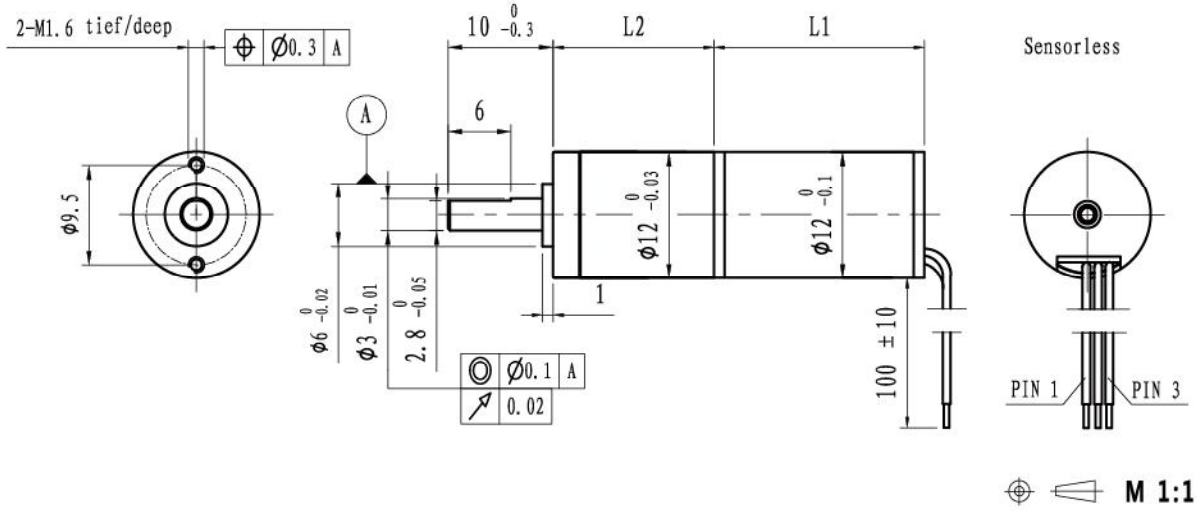



## Connection

**Conection**
specical connector
please contact sales engineer

## Configuration

Performance: Customized in the continuous operating range
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft




## Motor type

| | | | | | |
|---|---|---|---|---|---|
| 1 | Length of motor L1 | ECG1220L | mm | 20 | Motor performance at P8. |
| | | ECG1230L | mm | 30 | Motor performance at P9. |

## Gearhead Data

| | | | ECG12..L P16 | | | | |
|---|---|---|---|---|---|---|---|
| 2 | Housing material | | | | Steel | | |
| 3 | Geartrain material | | | | Steel | | |
| 4 | Bearing type on output shaft | | | | Ball bearing | | |
| 5 | Max. radial load (10mm from flange) | N | | | 5 | | |
| 6 | Max. axial load | N | | | 5 | | |
| 7 | Radial play of shaft | mm | | | 0.1 | | |
| 8 | Thrust play of shaft | mm | | | 0.2 | | |
| 9 | Bcaklash at no load | ° | | | 3 | | |
| 10 | Max. continuous speed | rpm | | | 42000 | | |
| 11 | Operating temperatue range | ℃ | | | -30..+100 | | |
| 12 | Number of stages | | 1 | 2 | 3 | 4 | 5 |
| 13 | Max continuous torque | Nm | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 |
| 14 | Max. intermittent torque | Nm | 0.15 | 0.25 | 0.25 | 0.25 | 0.25 |
| 15 | Max. efficiency | % | 90 | 81 | 73 | 65 | 59 |
| 16 | Gearhead length L2 | mm | 15.1 | 17.9 | 20.7 | 23.5 | 26.3 |
| 17 | Ratio | X:1 | 3.47, 3.94 | 12.07, 13.68<br>15.5, 18.17 | 41.92, 47.51<br>55.69, 53.86<br>63.13 61.05<br>71.56, 83.88 | 145.6, 165.04<br>187,08, 219.29<br>248.56, 281.75<br>291.36 330.26 | 505.8, |

## Connection

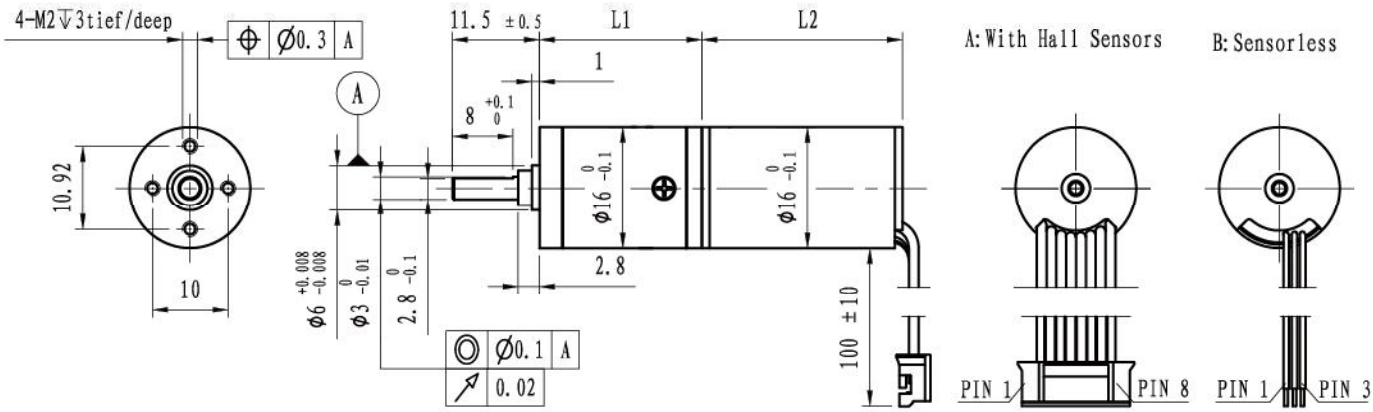
**Conection (Sensorless)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG28 | yellow |
| Pin 2 | Motor winding MB | AWG28 | green |
| Pin 3 | Motor winding MC | AWG28 | blue |

## Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimensions/length
Connector: JST/MOLEX/TE

More:
Special design for high speed/high torque
ECD series can be chosen in some application
Details please contact our sales engineer




M 1:1

| | | | | ECG16..L<br>ECG16..S P16 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Motor type** | | | | | | | | |
| 1 | Length of motor L1 | ECG1630S/L | mm | | | 30 | | Motor performance at P10. |
| | | ECG1636S/L | mm | | | 36 | | Motor performance at P11. |
| | | ECG1656S/L | mm | | | 56 | | Motor performance at P52. |
| | | ECDG1638L | mm | | | 38 | | Motor performance at P39. |
| **Gearhead Data** | | | | | | | | |
| 2 | Housing material | | | | | Steel | | |
| 3 | Geartrain material | | | | | Steel | | |
| 4 | Bearing type on output shaft | | | | | Ball bearing | | |
| 5 | Max. radial load (10mm from flange) | | N | | | 15.6 | | |
| 6 | Max. axial load | | N | | | 4.9 | | |
| 7 | Radial play of shaft | | mm | | | 0.04 | | |
| 8 | Thrust play of shaft | | mm | | | 0.4 | | |
| 9 | Bcaklash at no load | | ° | | | 2 | | |
| 10 | Max. continuous speed | | rpm | | | 42000 | | |
| 11 | Operating temperatue range | | ℃ | | | -30..+100 | | |
| 12 | Number of stages | | | 1 | 2 | 3 | 4 | 5 |
| 13 | Max continuous torque | | Nm | 0.42 | 0.6 | 0.75 | 0.9 | 0.9 |
| 14 | Max. intermittent torque | | Nm | 0.84 | 1.2 | 1.5 | 1.8 | 1.8 |
| 15 | Max. efficiency | | % | 90 | 83 | 77 | 72 | 67 |
| 16 | Gearhead length L2 | | mm | 17.9 | 21.8 | 25.7 | 29.6 | 33.5 |
| 17 | Ratio | | X:1 | 3.7, 4.4, 5.4, 6.5 | 14.5, 16.4, 19.2, 23.7, 28.5, 35.1 42.3, | 48.2, 54.5, 61.7, 67.1, 75.9, 80.8, 88.8, 94.5, 103.8, 109.3 125, 131 154, 185.3 | 204, 228, 251.8, 274.6, 294.4, 313.3 333, 354.4, 389.3, 400.8 455.2, 493.6, 547.9, 560.6 674.8, 690.4 | 738, 850.3, 944.2, 1023.5, 1136.6, 1232 1328.9, 1447.2, 1502.9, 1636.7, 1757, 1851 1996, 2164, 2402, 2530, 3027, 3644, |

## Connection

**Conection A (Sensor)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |

Conector
JST PH2.0-8P

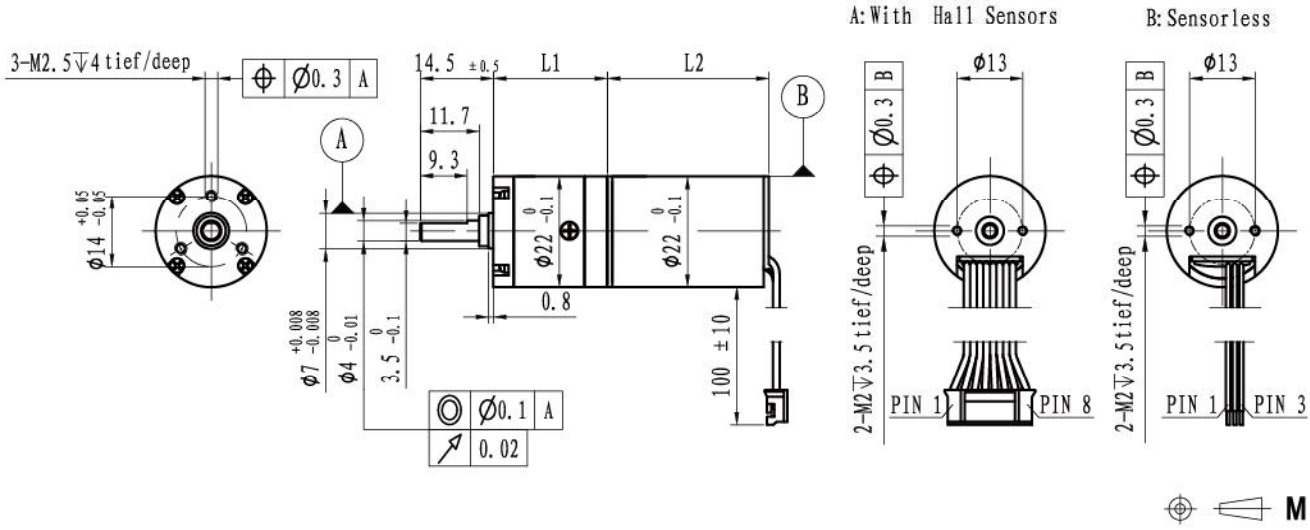
**Conection B (Sensorless)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimensions/length
Connector: JST/MOLEX/TE

More:
Special design for high speed/high torque
ECD series can be chosen in some application
Details please contact our sales engineer




M 1:1.5

| | | | | ECG22..L<br>ECG22..S P22 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Motor type** | | | | | | | | |
| 1 | Length of motor L1 | ECG2232S/L | mm | | | 32 | | Motor performance at P13. |
| | | ECG2240S/L | mm | | | 40 | | Motor performance at P14. |
| | | ECG2248S/L | mm | | | 48 | | Motor performance at P15. |
| | | ECG2260S/L | mm | | | 60 | | Motor performance at P16. |
| | | | | | | | | |
| | | ECDG2238S | mm | | | 38.5 | | Motor performance at P40. |
| | | ECDG2246S | mm | | | 46.5 | | Motor performance at P41. |
| **Gearhead Data** | | | | | | | | |
| 2 | Housing material | | | | | Steel | | |
| 3 | Geartrain material | | | | | Steel | | |
| 4 | Bearing type on output shaft | | | | | Ball bearing | | |
| 5 | Max. radial load (10mm from flange) | | N | | | 15.6 | | |
| 6 | Max. axial load | | N | | | 4.9 | | |
| 7 | Radial play of shaft | | mm | | | 0.04 | | |
| 8 | Thrust play of shaft | | mm | | | 0.4 | | |
| 9 | Bcaklash at no load | | ° | | | 2 | | |
| 10 | Max. continuous speed | | rpm | | | 42000 | | |
| 11 | Operating temperatue range | | ℃ | | | -30..+100 | | |
| 12 | Number of stages | | | 1 | 2 | 3 | 4 | 5 |
| 13 | Max continuous torque | | Nm | 0.72 | 0.96 | 1.2 | 1.45 | 1.45 |
| 14 | Max. intermittent torque | | Nm | 1.44 | 1.92 | 2.4 | 2.9 | 2.9 |
| 15 | Max. efficiency | | % | 90 | 83 | 77 | 72 | 72 |
| 16 | Gearhead length L2 | | mm | 22.6 | 27.6 | 32.7 | 37.7 | 42.8 |
| 17 | Ratio | | X:1 | 3.7, 4.4, 5.4, 6.5 | 14.5, 16.4, 19.2, 23.7, 28.5, 35.1 42.3, | 48.2, 54.5, 61.7, 67.1, 75.9, 80.8, 88.8, 94.5, 103.8, 109.3 125, 131 154, 185.3 | 204, 228, 251.8, 274.6, 294.4, 313.3 333, 354.4, 389.3, 400.8 455.2, 493.6, 547.9, 560.6 674.8, 690.4 | 738, 850.3, 944.2, 1023.5, 1136.6, 1232 1328.9, 1447.2, 1502.9, 1636.7, 1757, 1851 1996, 2164, 2402, 2530, 3027, 3644, |

## Connection

**Conection A (Sensor)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |

Conector
JST PH2.0-8P

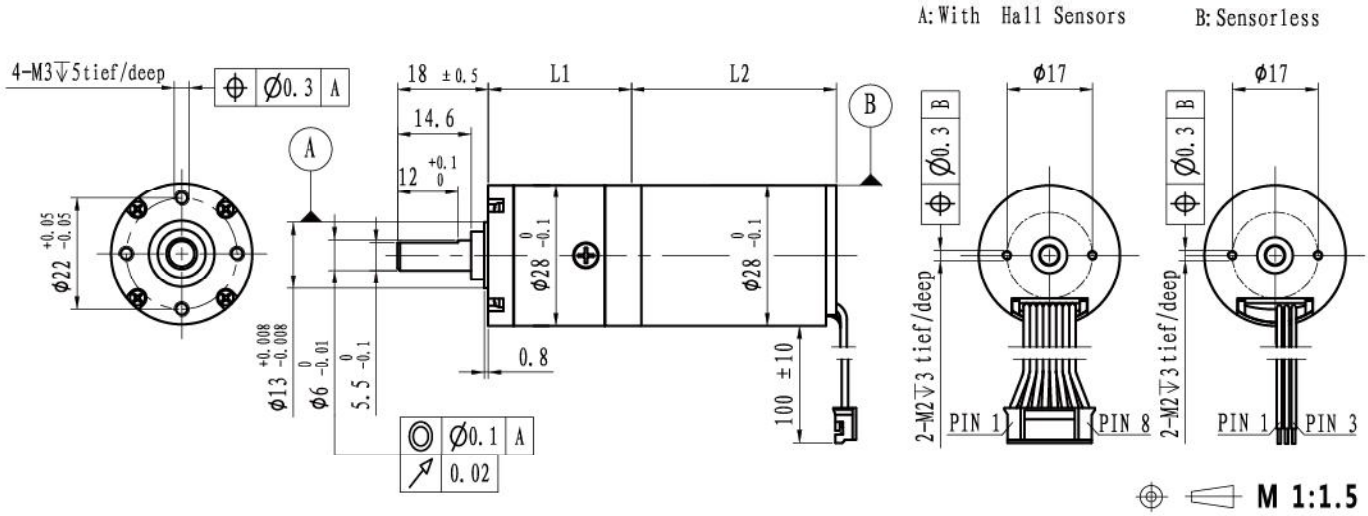
**Conection B (Sensorless)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimensions/length
Connector: JST/MOLEX/TE

More:
Special design for high speed/high torque
ECD series can be chosen in some application
Details please contact our sales engineer




**ECG28..L**
**ECG28..S** P28

## Motor type

| | | | | | |
|---|---|---|---|---|---|
| 1 | Length of motor L1 | ECG2845S/L | mm | 45 | Motor performance at P19. |
| | | ECG2854S/L | mm | 54 | Motor performance at P20. |
| | | ECG2864S/L | mm | 64 | Motor performance at P21. |
| | | ECDG2854S | mm | 54 | Motor performance at P44. |
| | | ECDG2863S | mm | 63 | Motor performance at P45. |

## Gearhead Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | Housing material | | | | Steel | | |
| 3 | Geartrain material | | | | Steel | | |
| 4 | Bearing type on output shaft | | | | Ball bearing | | |
| 5 | Max. radial load (10mm from flange) | N | | | 58.8 | | |
| 6 | Max. axial load | N | | | 29.4 | | |
| 7 | Radial play of shaft | mm | | | 0.04 | | |
| 8 | Thrust play of shaft | mm | | | 0.4 | | |
| 9 | Bcaklash at no load | ° | | | 2 | | |
| 10 | Max. continuous speed | rpm | | | 36000 | | |
| 11 | Operating temperatue range | ℃ | | | -30..+100 | | |
| 12 | Number of stages | | 1 | 2 | 3 | 4 | |
| 13 | Max continuous torque | Nm | 1.55 | 2.1 | 2.6 | 3.1 | |
| 14 | Max. intermittent torque | Nm | 3.1 | 4.2 | 5.2 | 6.2 | |
| 15 | Max. efficiency | % | 90 | 83 | 77 | 72 | |
| 16 | Gearhead length L2 | mm | 28.4 | 34.7 | 41 | 47.3 | |
| 17 | Ratio | X:1 | 4.4, 5.2, 6.7, 8.3 | 15.1, 16.9, 18, 20.1, 23.1, 25.6 27.6, 29.3, 31.8, 35, 43.5, 55.2, | 61.7, 68,7, 77,1, 87,6, 100.6, 109, 120, 125, 129, 134.1 139.8, 144.7 149.1, 154 166.8, 183.8 211.7, 243 264.5, 290 | 335.9, 385.5, 411.4, 494.8, 528, 630, 677.6, 705.8 759.7, 860.4 964.7, 1069 1158, 1276, 1523, 1755, 2014, 3051 3792, 4713 | |

## Connection

**Conection A (Sensor)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Vhall 3-18 VDC | AWG26 | black |
| Pin 2 | Hall sensor HA | AWG26 | black |
| Pin 3 | Hall sensor HB | AWG26 | black |
| Pin 4 | Hall sensor HC | AWG26 | black |
| Pin 5 | GND | AWG26 | black |
| Pin 6 | Motor winding MA | AWG26 | black |
| Pin 7 | Motor winding MB | AWG26 | black |
| Pin 8 | Motor winding MC | AWG26 | black |

Conector
JST PH2.0-8P

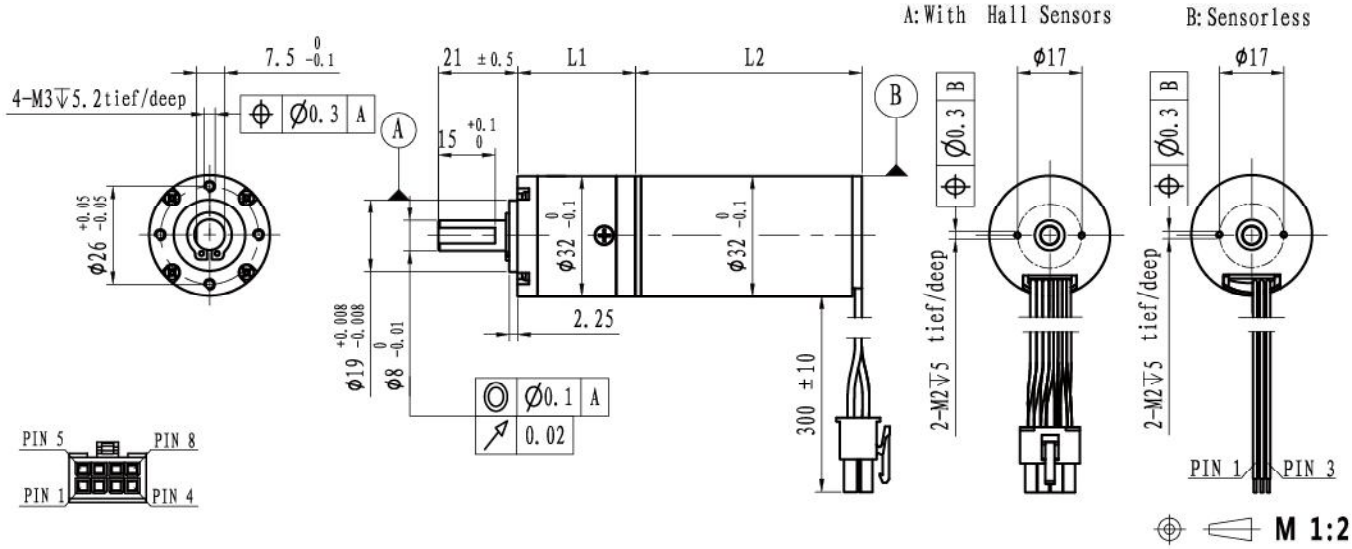
**Conection B (Sensorless)** PVC

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG26 | yellow |
| Pin 2 | Motor winding MB | AWG26 | green |
| Pin 3 | Motor winding MC | AWG26 | blue |

## Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimensions/length
Connector: JST/MOLEX/TE

More:
Special design for high speed/high torque
ECD series can be chosen in some application
Details please contact our sales engineer




| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | **ECG32..L<br>ECG32..S** | **P32** | |
| **Motor type** | | | | | | |
| 1 | Length of motor L1 | ECG3242S/L | mm | | 42 | Motor performance at P22. |
| | | ECG3260S/L | mm | | 60 | Motor performance at P23. |
| | | ECG3270S/L | mm | | 70 | Motor performance at P24. |
| | | ECDG3270S | mm | | 70 | Motor performance at P46. |
| **Gearhead Data** | | | | | | |
| 2 | Housing material | | | | Steel | |
| 3 | Geartrain material | | | | Steel | |
| 4 | Bearing type on output shaft | | | | Ball bearing | |
| 5 | Max. radial load (10mm from flange) | | N | | 98 | |
| 6 | Max. axial load | | N | | 58.8 | |
| 7 | Radial play of shaft | | mm | | 0.04 | |
| 8 | Thrust play of shaft | | mm | | 0.4 | |
| 9 | Bcaklash at no load | | ° | | 2 | |
| 10 | Max. continuous speed | | rpm | | 36000 | |
| 11 | Operating temperatue range | | ℃ | | -30..+100 | |
| 12 | Number of stages | | | 1 | 2 | 3 | 4 |
| 13 | Max continuous torque | | Nm | 2.34 | 3.1 | 3.88 | 4.65 |
| 14 | Max. intermittent torque | | Nm | 4.68 | 6.2 | 7.76 | 9.3 |
| 15 | Max. efficiency | | % | 90 | 83 | 77 | 72 |
| 16 | Gearhead length L2 | | mm | 31.2 | 38.7 | 46.2 | 53.7 |
| 17 | Ratio | | X:1 | 4.4, 5.2, 6.7, 8.3 | 15.1, 16.9, 18, 20.1, 23.1, 25.6 27.6, 29.3, 31.8, 35, 43.5, 55.2, | 61.7, 68,7, 77,1, 87,6, 100.6, 109, 120, 125, 129, 134.1 139.8, 144.7 149.1, 154 166.8, 183.8 211.7, 243 264.5, 290 | 335.9, 385.5, 411.4, 494.8, 528, 630, 677.6, 705.8 759.7, 860.4 964.7, 1069 1158, 1276, 1523, 1755, 2014, 3051 3792, 4713 |

**Connection**

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HC | AWG26 | Green |

Conector
Molex5557-8P

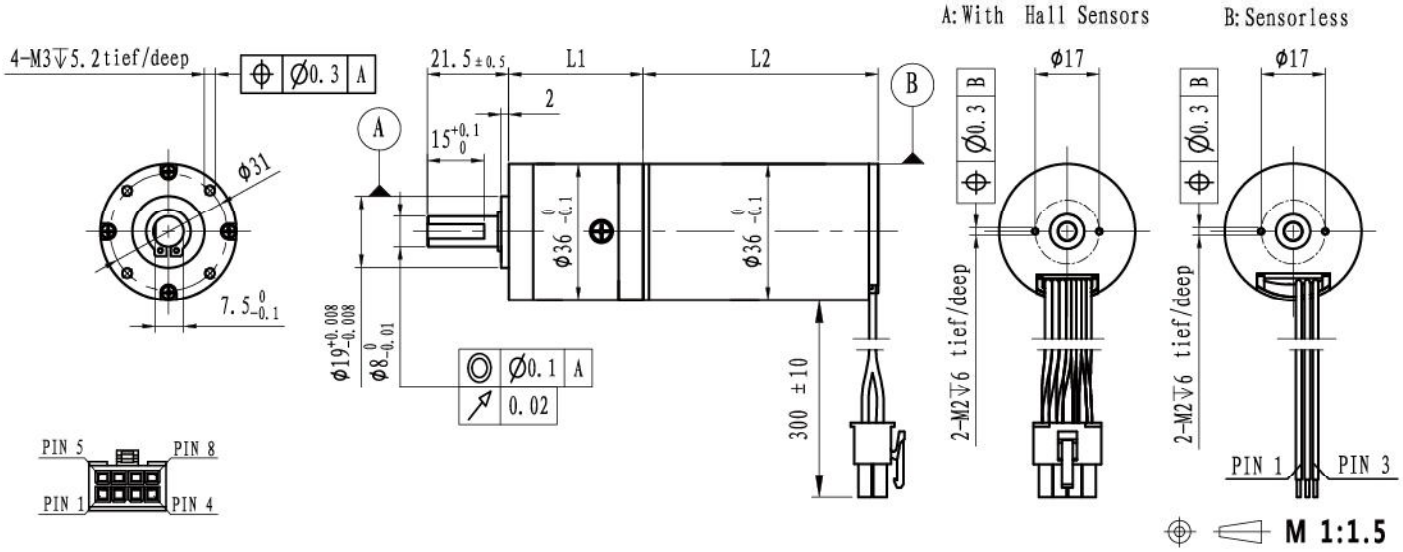
**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

**Configuration**

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimensions/length
Connector: JST/MOLEX/TE

More:
Special design for high speed/high torque
ECD series can be chosen in some application
Details please contact our sales engineer




| | | | | ECG36..L<br>ECG36..S | | | |
|---|---|---|---|---|---|---|---|
| **Motor type** | | | | **P36** | | | |
| 1 | Length of motor L1 | ECG3660S/L | mm | | | 60 | Motor performance at P25. |
| | | ECG3670S | mm | | | 70 | Motor performance at P26. |
| | | ECDG3673S | mm | | | 73 | Motor performance at P47. |
| | | ECDG3683S | mm | | | 83 | Motor performance at P48. |
| **Gearhead Data** | | | | | | | |
| 2 | Housing material | | | | | Steel | |
| 3 | Geartrain material | | | | | Steel | |
| 4 | Bearing type on output shaft | | | | | Ball bearing | |
| 5 | Max. radial load (10mm from flange) | | N | | | 98 | |
| 6 | Max. axial load | | N | | | 58.8 | |
| 7 | Radial play of shaft | | mm | | | 0.04 | |
| 8 | Thrust play of shaft | | mm | | | 0.4 | |
| 9 | Bcaklash at no load | | ° | | | 2 | |
| 10 | Max. continuous speed | | rpm | | | 30000 | |
| 11 | Operating temperatue range | | ℃ | | | -30..+100 | |
| 12 | Number of stages | | | 1 | 2 | 3 | 4 |
| 13 | Max continuous torque | | Nm | 3.24 | 4.32 | 5.4 | 6.48 |
| 14 | Max. intermittent torque | | Nm | 6.48 | 8.64 | 10.8 | 12.96 |
| 15 | Max. efficiency | | % | 90 | 83 | 77 | 72 |
| 16 | Gearhead length L2 | | mm | 35.6 | 44.2 | 52.8 | 61.4 |
| 17 | Ratio | | X:1 | 4.3, 5.1, 6.3, 7.6 | 14.7, 16.3, 18.6, 19.2, 21.9, 23.9, 25.8, 27.2, 28.9, 32 38.7, 39.7, 48, 58.1 | 65.6, 74.6, 81.4, 90.5, 98.5, 109, 112.1, 124.6, 123, 141.8, 150.4, 162.4, 171.2, 182, 196.5, 220.3 243.9, 250.7 | 277.4, 302.6, 335.8, 351, 382.2, 413.2, 459.3, 500.1, 537.4, 583.5, 620.6, 686.9, 744.7, 824.4, 869, 924.2 1006, 1388, 1680, 3380 |

## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HC | AWG26 | Green |

Conector
Molex5557-8P

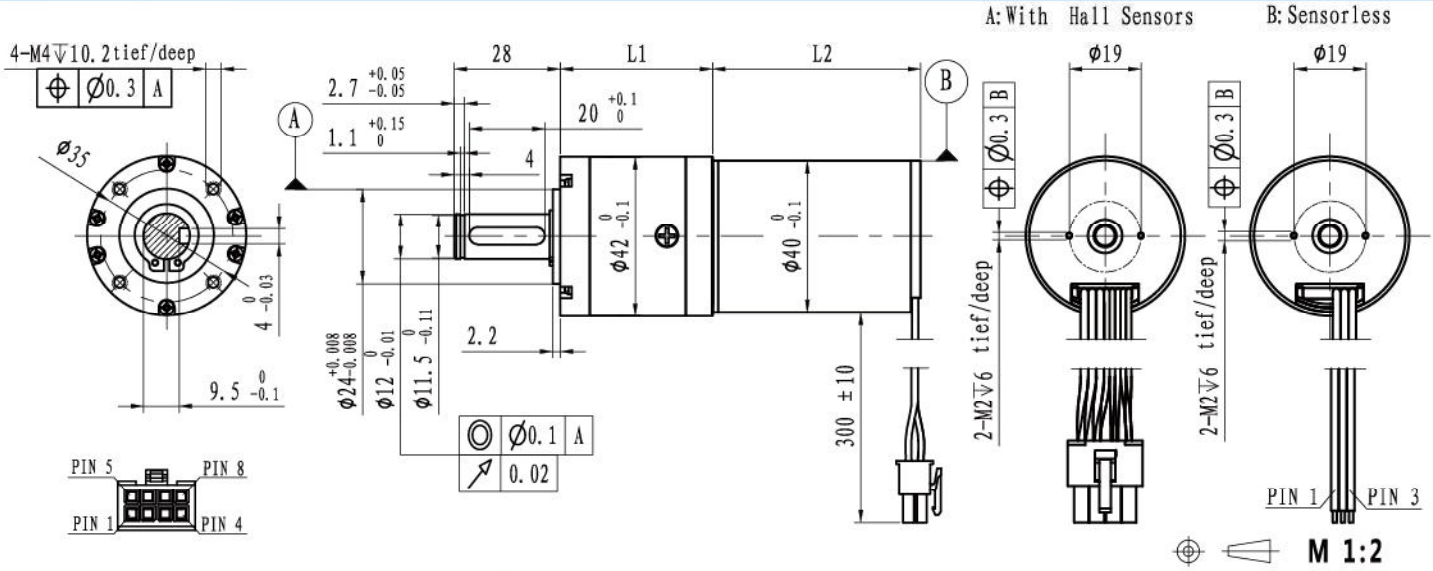
**Conection B (Sensorless)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

## Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimensions/length
Connector: JST/MOLEX/TE

More:
Special design for high speed/high torque
ECD series can be chosen in some application
Details please contact our sales engineer




**ECG40..L**
**ECG40..S** P42

## Motor type

| | | | | | |
|---|---|---|---|---|---|
| 1 | Length of motor L1 | ECG4058S/L | mm | 58 | Motor performance at P27. |
| | | ECG4070S/L | mm | 70 | Motor performance at P28. |
| | | ECG4088S/L | mm | 88 | Motor performance at P29. |

## Gearhead Data

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | Housing material | | | | Steel | |
| 3 | Geartrain material | | | | Steel | |
| 4 | Bearing type on output shaft | | | | Ball bearing | |
| 5 | Max. radial load (10mm from flange) | N | | | 196 | |
| 6 | Max. axial load | N | | | 98 | |
| 7 | Radial play of shaft | mm | | | 0.04 | |
| 8 | Thrust play of shaft | mm | | | 0.4 | |
| 9 | Bcaklash at no load | ° | | | 2 | |
| 10 | Max. continuous speed | rpm | | | 30000 | |
| 11 | Operating temperatue range | ℃ | | | -30..+100 | |
| 12 | Number of stages | | 1 | 2 | 3 | 4 |
| 13 | Max continuous torque | Nm | 6.5 | 8.6 | 10.8 | 13 |
| 14 | Max. intermittent torque | Nm | 13 | 17.2 | 21.6 | 26 |
| 15 | Max. efficiency | % | 90 | 83 | 77 | 72 |
| 16 | Gearhead length L2 | mm | 43.8 | 54.6 | 65.4 | 76 |
| 17 | Ratio | X:1 | 4.3, 5.1, 6.3, 7.6 | 14.7, 16.3, 18.6, 19.2, 21.9, 23.9, 25.8, 27.2, 28.9, 32 38.7, 39.7, 48, 58.1 | 65.6, 74.6, 81.4, 90.5, 98.5, 109, 112.1, 124.6, 123, 141.8, 150.4, 162.4, 171.2, 182, 196.5, 220.3 243.9, 250.7 | 277.4, 302.6, 335.8, 351, 382.2, 413.2, 459.3, 500.1, 537.4, 583.5, 620.6, 686.9, 744.7, 824.4, 869, 924.2 1006, 1388, 1680, 3380 |

## Connection

**Conection A (Sensor)** PTFE

| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MB | AWG20 | Green |
| Pin 2 | Vhall 3-18 VDC | AWG26 | Red |
| Pin 3 | Hall sensor HA | AWG26 | Yellow |
| Pin 4 | Hall sensor HC | AWG26 | Blue |
| Pin 5 | Motor winding MA | AWG20 | Yellow |
| Pin 6 | Motor winding MC | AWG20 | Blue |
| Pin 7 | GND | AWG26 | Black |
| Pin 8 | Hall sensor HC | AWG26 | Green |

Conector
Molex5557-8P

**Conection B (Sensorless)** PTFE

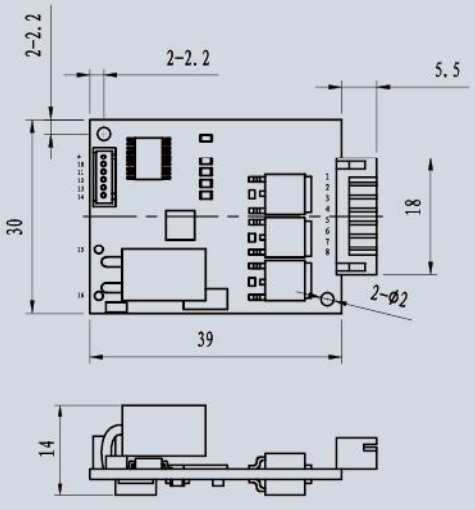
| | | | |
|---|---|---|---|
| Pin 1 | Motor winding MA | AWG20 | Yellow |
| Pin 2 | Motor winding MB | AWG20 | Green |
| Pin 3 | Motor winding MC | AWG20 | Blue |

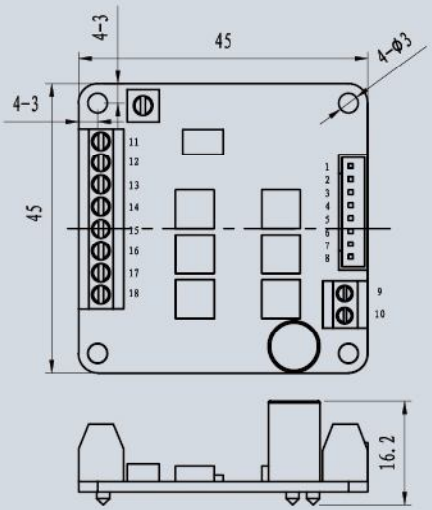
## Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft
Leadwire: PVC/Silicon/Teflon/UL No/Dimensions/length
Connector: JST/MOLEX/TE

More:
Special design for high speed/high torque
ECD series can be chosen in some application
Details please contact our sales engineer

| | VSC 3002S-00 | VSC 3003S-00 |
|---|---|---|
| **Operating Mode** | | |
| | 10-30VDC, Max. Current 2A<br>Speed controller with hall sensor, Open loop<br>Overload protection<br>Stall protection<br>Sensor error protection | 8-30VDC, Max. Current 3A<br>Speed controller with hall sensor, Open loop<br>Overload protection<br>Stall protection<br>Sensor error protection |
| **Electrical Data** | | |
| 1 DC motor up to | 60W | 90W |
| 2 Operating Voltage Vcc | 10-30 VDC | 8-30 VDC |
| 3 Max.output current | 5A , <60S | 5A , <60S |
| 4 Continuous output current | 2A | 3A |
| 5 Pulse width modulation frequency | 20KHz | 20KHz |
| 6 Sampling rate PI current controller | 20KHz | 20KHz |
| 7 Max.Speed (1 pole pair) | 60000rpm | 60000rpm |
| 8 Efficiency | 92% | 92% |
| **Inputs/Outputs** | | |
| 9 Hall sensor signal | HA,HB,HC | HA,HB,HC |
| 10 Digital inputs/outputs | 4 | 5 |
| 11 Set value "SP" | Set value speed 0.... +5V (1024 steps) | Set value speed 0.... +5V (1024 steps) |
| 12 Enable "EN" | Enable 0...+5V | Enable 0...+5V |
| 13 Direction "F/R" | Direction 0...+5V | Direction 0...+5V |
| 14 Brake "BK" | Brake 0...+5V | Brake 0...+5V |
| 15 Speed Feedback "PG" | - - - | TTL |
| 16 Status Indicators | Operation: LED light/Blink at 1 HZ; Error: LED Blink at 20Hz | |
| 17 Hall sensor supply voltage | +5 VDC | +5 VDC |
| 18 Hall & Digital signal ground | GND | GND |
| **Environmental Conditions** | | |
| 18 Temperature - Operation | -30....+45℃ | -30....+45℃ |
| 19 Temperature - Storage | -40....+85℃ | -40....+85℃ |
| **Mechanical Data** | | |
| 20 Weight | Approx. 15 g | Approx. 20 g |
| 21 Dimensisons (L x W x H) | 30 x 39 x 14mm | 45 x 45 x16.2mm |
| 22 Mounting holes | for screws M2 | for screws M3 |
| 23 Connections | | |



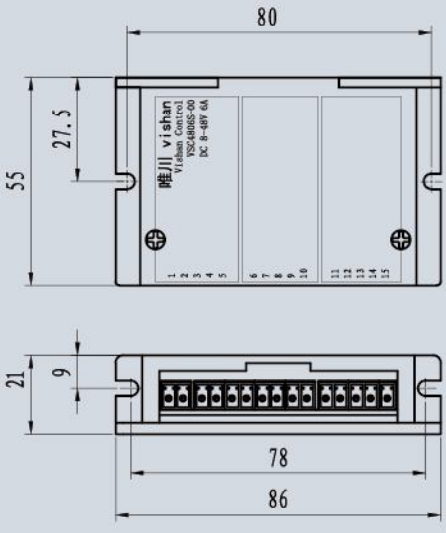
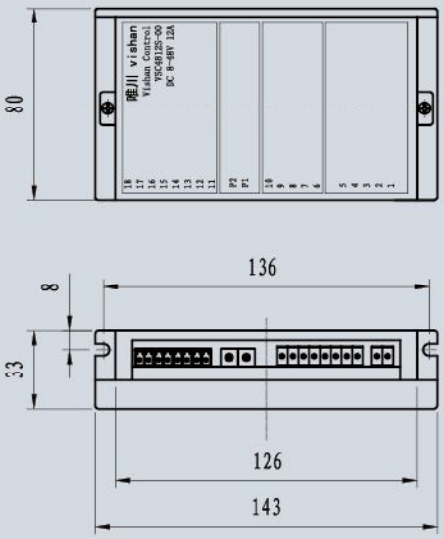




| | | | |
|---|---|---|---|
| Pin9 | BK | Pin1 | +5V, Output |
| Pin10 | SP | Pin2 | HA |
| Pin11 | F/R | Pin3 | HB |
| Pin12 | EN | Pin4 | HC |
| Pin13 | +5V, Output | Pin5 | GND |
| Pin14 | GND | Pin6 | MA |
| Pin15 | POWER + | Pin7 | MB |
| Pin16 | POWER - | Pin8 | MC |

| | | | |
|---|---|---|---|
| Pin11 | PG | Pin1 | +5V, Output |
| Pin12 | SP | Pin2 | HA |
| Pin13 | GND | Pin3 | HB |
| Pin14 | GND | Pin4 | HC |
| Pin15 | +5V, Output | Pin5 | GND |
| Pin16 | EN | Pin6 | MA |
| Pin17 | F/R | Pin7 | MB |
| Pin18 | BK | Pin8 | MC |
| | | Pin9 | POWER + |
| | | Pin10 | POWER - |

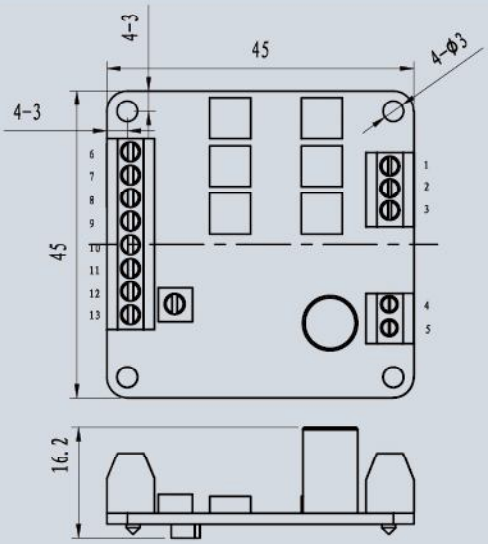
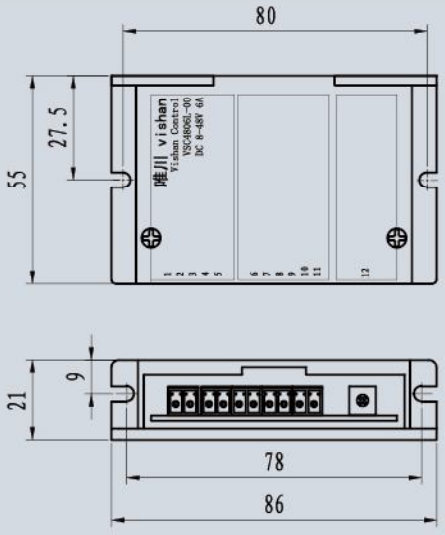
# Motor Control

BLDC motor speed controller, Sensor, 6/12A

| | | VSC 4806S-00 | VSC 4812S-00 |
|---|---|---|---|
| **Operating Mode** | | | |
| | | 8-48VDC, Max. Current 6A<br>Speed controller with hall sensor, Open loop<br>Overload protection<br>Stall protection<br>Sensor error protection | 8-48VDC, Max. Current 12A<br>Speed controller with hall sensor, Open loop<br>Overload protection<br>Stall protection<br>Sensor error protection |
| **Electrical Data** | | | |
| 1 | DC motor up to | 300W | 600W |
| 2 | Operating Voltage Vcc | 8-48 VDC | 8-48 VDC |
| 3 | Max.output current | 8A , <30S | 15A , <30S |
| 4 | Continuous output current | 6A | 12A |
| 5 | Pulse width modulation frequency | 20KHz | 20KHz |
| 6 | Sampling rate PI current controller | 20KHz | 20KHz |
| 7 | Max.Speed (1 pole pair) | 60000rpm | 60000rpm |
| 8 | Efficiency | 95% | 95% |
| **Inputs/Outputs** | | | |
| 9 | Hall sensor signal | HA,HB,HC | HA,HB,HC |
| 10 | Digital inputs/outputs | 3 | 6 |
| 11 | Set value "SP" | Set value speed 0.... +5V (1024 steps) | Set value speed 0.... +5V (1024 steps) |
| 12 | Enable "EN" | Enable 0...+5V | Enable 0...+5V |
| 13 | Direction "F/R" | Direction 0...+5V | Direction 0...+5V |
| 14 | Brake "BK" | --- | Brake 0...+5V |
| 15 | Speed Feedback "PG" | --- | OC ouput(30V/10mA max) |
| 16 | Alarm Ouput "ALARM" | --- | OC ouput(30V/10mA max) |
| 17 | Status Indicators | Operation: LED light/Blink at 1 HZ; Error: LED Blink at 20Hz | |
| 18 | Hall sensor supply voltage | +5 VDC | +5 VDC |
| 19 | Hall & Digital signal ground | GND | GND |
| **Environmental Conditions** | | | |
| 20 | Temperature - Operation | -30....+45℃ | -30....+45℃ |
| 21 | Temperature - Storage | -40....+85℃ | -40....+85℃ |
| **Mechanical Data** | | | |
| 22 | Weight | Approx. 90 g | Approx. 300 g |
| 23 | Dimensisons (L x W x H) | 55 x 86 x 21mm | 80x 143 x33mm |
| 24 | Mounting holes | for screws M3 | for screws M3 |
| 25 | Connections |  |  |

| | | | |
|---|---|---|---|
| Pin1 | POWER + | Pin9 | HC |
| Pin2 | POWER - | Pin10 | +5V, Output |
| Pin3 | MA | Pin11 | GND |
| Pin4 | MB | Pin12 | F/R |
| Pin5 | MC | Pin13 | EN |
| Pin6 | GND | Pin14 | SP |
| Pin7 | HA | Pin15 | +5V, Output |
| Pin8 | HB | | |

| | | | |
|---|---|---|---|
| Pin1 | POWER + | Pin10 | +5V, Output |
| Pin2 | POWER - | Pin11 | GND |
| Pin3 | MA | Pin12 | F/R |
| Pin4 | MB | Pin13 | EN |
| Pin5 | MC | Pin14 | Brake |
| Pin6 | GND | Pin15 | SP |
| Pin7 | HA | Pin16 | PG |
| Pin8 | HB | Pin17 | ALM |
| Pin9 | HC | Pin18 | +5V, Output |

| | | VSC 3003L-00 | VSC 4806L-00 |
|---|---|---|---|
| **Operating Mode** | | 8-30VDC, Max. Current 3A<br>Speed controller without sensor, Open loop<br>Overload protection<br>Stall protection<br>CW/CCW control | 8-48VDC, Max. Current 6A<br>Speed controller without sensor, Open loop<br>Overload protection<br>Stall protection<br>CW/CCW control |
| **Electrical Data** | | | |
| 1 | DC motors up to | 90W | 300W |
| 2 | Operating Voltage Vcc | 8-30 VDC | 8-48 VDC |
| 3 | Max.output current | 5A , <60S | 8A , <30S |
| 4 | Continuous output current | 3A | 6A |
| 5 | Pulse width modulation frequency | 16KHz | 16KHz |
| 6 | Sampling rate PI current controller | 16KHz | 16KHz |
| 7 | Max.Speed (1 pole pair) | 50000rpm | 50000rpm |
| 8 | Efficiency | 92% | 95% |
| **Inputs/Outputs** | | | |
| 9 | Digital inputs/outputs | 5 | 4 |
| 10 | Set value "SP" | Set value speed 0.... +5V (1024 steps) | Set value speed 0.... +5V (1024 steps) |
| 11 | Enable "EN" | Enable 0...+5V | Enable 0...+5V |
| 12 | Direction "F/R" | Direction 0...+5V | Direction 0...+5V |
| 13 | Brake "BK" | Brake 0...+5V | --- |
| 14 | Speed Feedback "PG" | TTL | OC ouput(30V/10mA max) |
| 15 | Status Indicators | Operation: LED light/Blink at 1 HZ; Error: LED Blink at 20Hz | |
| **Environmental Conditions** | | | |
| 16 | Temperature - Operation | -30....+45°C | -30....+45°C |
| 17 | Temperature - Storage | -40....+85°C | -40....+85°C |
| **Mechanical Data** | | | |
| 18 | Weight | Approx. 20 g | Approx. 90 g |
| 19 | Dimensisons (L x W x H) | 45 x 45 x16.2mm | 55 x 86 x 21mm |
| 20 | Mounting holes | for screws M3 | for screws M3 |
| 21 | Connections |  |  |

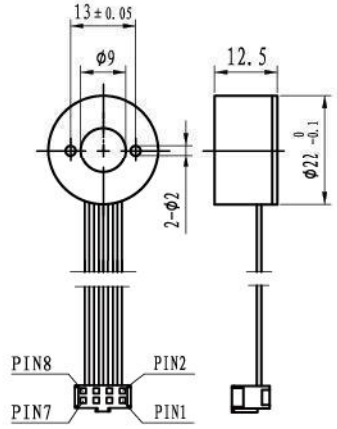
| | | | |
|---|---|---|---|
| Pin6 | PG | Pin1 | MC |
| Pin7 | SP | Pin2 | MB |
| Pin8 | GND | Pin3 | MA |
| Pin9 | GND | Pin4 | POWER - |
| Pin10 | +5V, Output | Pin5 | POWER + |
| Pin11 | EN | | |
| Pin12 | F/R | | |
| Pin13 | BK | | |

| | | | |
|---|---|---|---|
| Pin1 | POWER + | Pin6 | GND |
| Pin2 | POWER - | Pin7 | PG |
| Pin3 | MA | Pin8 | SP |
| Pin4 | MB | Pin9 | F/R |
| Pin5 | MC | Pin10 | EN |
| | | Pin11 | +5V, Output |

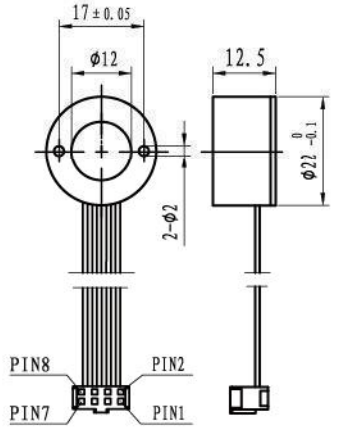
# Encoder

Magnetic encoder, 3 channels, Line Driver, 1024 CPT

EN22A/EN22AL




EN22B/EN22BL




M 1:1.5

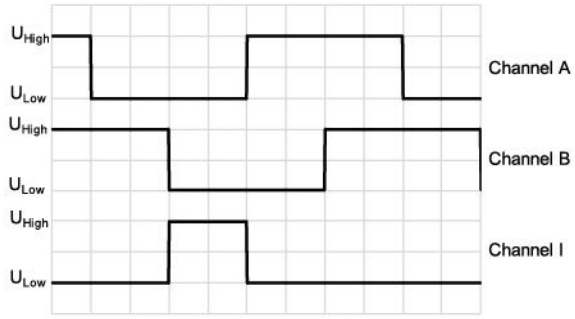
| | Without line driver / Line driver | | EN22A | EN22AL | EN22B | EN22BL |
|---|---|---|---|---|---|---|
| **Electrical Data** | | | | | | |
| 1 | Lines per revolution | | 1024 | 1024 | 1024 | 1024 |
| 2 | Number of channels | | 3 | 3 | 3 | 3 |
| 3 | Max. speed | rpm | 20000 | 20000 | 20000 | 20000 |
| 4 | Supply voltage | V | 5 | 5 | 5 | 5 |
| 5 | Output signal | | TTL | TTL | TTL | TTL |
| 6 | Index pulse width | °e | 90 | 90 | 90 | 90 |
| 7 | Phase shift, Channel A to B | °e | 90 | 90 | 90 | 90 |
| 8 | Interia of code disc | gcm^2 | 0.7 | 0.7 | 0.7 | 0.7 |
| 9 | Operating temperature range | °C | -40..+125 | -40..+125 | -40..+125 | -40..+125 |

**Features & Configuration**

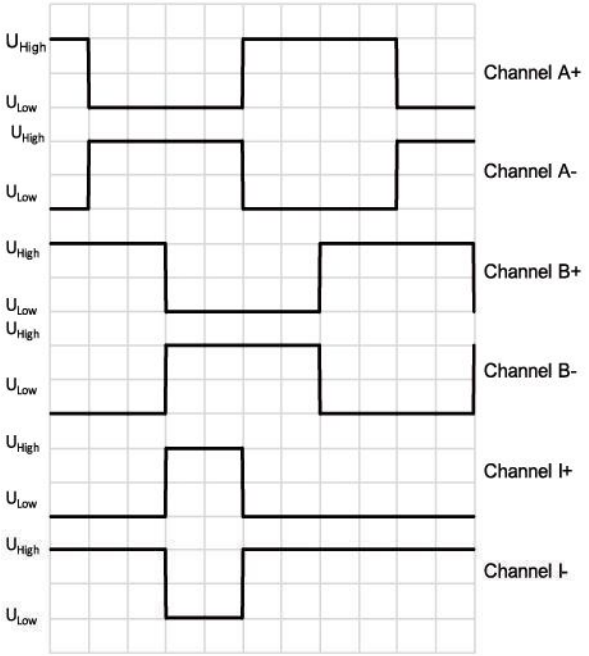
- Magnetic rotary encoder chip
- Output interface: ABI
- Configuration programmable : Zero position, ABI line per revolution
- ABI binrary pulse count: 1024, 512, 256ppr
- Optional line driver : Provide four channal differential line driver with complementary outputs for EN22AL and EN22BL

## Output Signals

**EN22A/EN22B**
with counter-clockwise rotation as from the shaft end

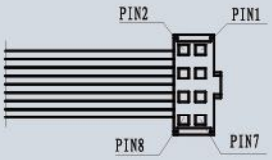



**EN22AL/EN22BL**
with counter-clockwise rotation as from the shaft end




## Connection

| Conection | EN22A/EN22B | PVC |
|---|---|---|
| Pin 1 | GND | AWG28 |
| Pin 2 | Vcc | AWG28 |
| Pin 3 | NC | AWG28 |
| Pin 4 | I+ | AWG28 |
| Pin 5 | NC | AWG28 |
| Pin 6 | B+ | AWG28 |
| Pin 7 | NC | AWG28 |
| Pin 8 | A+ | AWG28 |




| Conection | EN22AL/EN22BL | PVC |
|---|---|---|
| Pin 1 | GND | AWG28 |
| Pin 2 | Vcc | AWG28 |
| Pin 3 | I- | AWG28 |
| Pin 4 | I+ | AWG28 |
| Pin 5 | B- | AWG28 |
| Pin 6 | B+ | AWG28 |
| Pin 7 | A- | AWG28 |
| Pin 8 | A+ | AWG28 |

减速箱配套，我们推出直径12-45MM机加工传动型和精密级的多速比选择，应用与无刷电机和有刷电机组合，适用于各种医疗，自动化工业的需求。

For gearboxes, we have introduced a 12-45MM diameter machined transmission type and precision multi-speed ratio options, which are used in combination with brushless motors and brushed motors, which are suitable for various medical and automation industries.

机械手
Manipulator

机械手
Manipulator

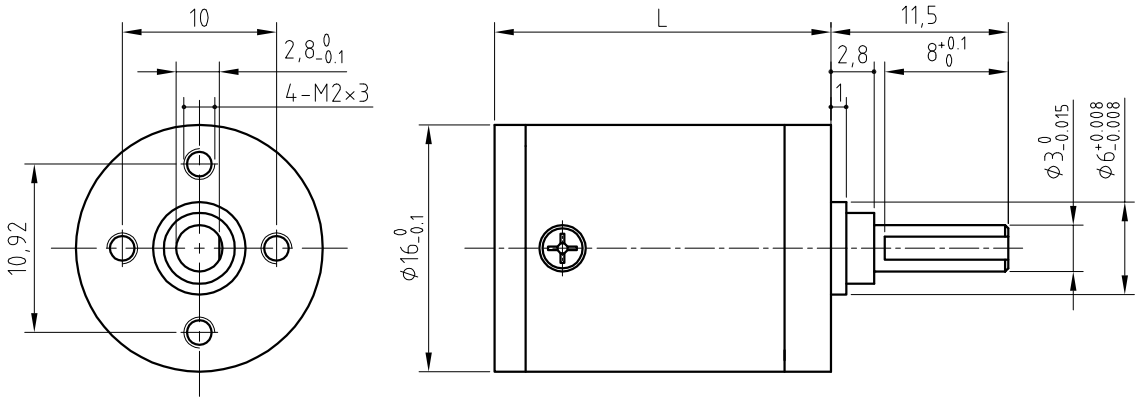
骨钻
bone drill

闸机
Gate machine

5G 传动系统
5G drive system

机器人
Robot

## ● 外形尺寸 APPEARANCE SIZE




| | |
|---|---|
| 外壳材料 Housing material | 金属 steel |
| 齿轮材料 Gearwhddl material | 金属 steel ① |
| 输出轴承型式 Bearing at output | 滚动轴承 Ball bearings |
| 径向负载 Radial load (10mm from flange) | ≤10 Kgf |
| 轴向负载 shaft axial load | ≤4 Kgf |
| 径向间隙 Radial play of shaft | ≤0.04mm |
| 轴向间隙 Thrust play of shaft | ≤0.4mm |
| 连续运行时最高允许输入转速 Max permissible input speed at continuous working | ≤20000rpm |

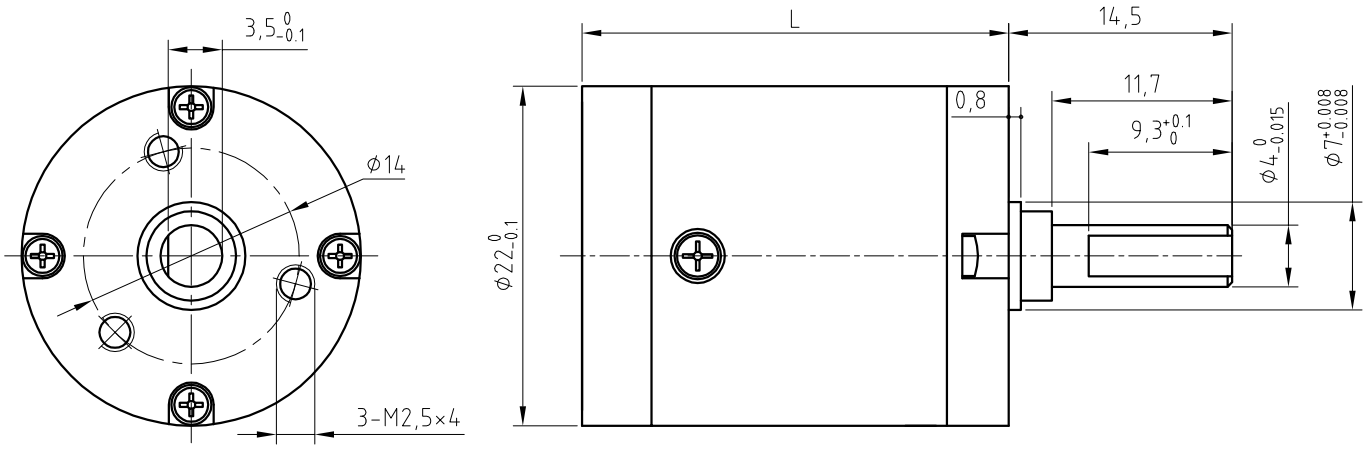
## ● 标准减速比型式 Gearboxes Specifications

| 减速比(部分) Reduction ratio (part) | 额定允许负载 rated tolerance torque | 瞬间允许负载 Max momentary tolerance torque | 效率 Efficiency | L (mm) | 背隙（无负载时） Backlash,at no-load |
|---|---|---|---|---|---|
| 3.75, 4.4, 5.4, 6.5 | 4.2Kgf-cm | 12.6Kgf-cm | 90% | 17.9 | ≤ 5arcmin |
| 14.1, 16.4, 19.2, 20.3, 23.7, 24.4,28.5, 29.2, 35.1, 42.3 | 6.0Kgf-cm | 18.0Kgf-cm | 81% | 21.8 | ≤10arcmin |
| 52.7, 61.7, 72.1, 84.3, 91.4, 103.8, 109.4, 125, 131.6, 154, 185.3, 228.15, 274.6 | 7.5Kgf-cm | 22.5Kgf-cm | 72% | 25.7 | ≤15arcmin |
| 197.8, 231.2, 284.8, 316.1, 333, 342.7, 389.3, 400.8, 455.2, 479.5, 493.6, 547.9 594.1, 674.8, 710.8, 812.3 855.6,1000, 1029.8, 1204 1483, 1785 | 9.0Kgf-cm | 27Kgf-cm | 65% | 29.6 | ≤20arcmin |
| 741.5, 867, 1013, 1067.9,1185 1248.6, 1386, 1502.9, 1620 1707, 1757, 1851, 1996,2055 2164, 2402, 2458,2530,2959 3027, 3644, 3728 ,4488,4592 5527, 6653, 8008, 9639,11602 | 9.0Kgf-cm | 27Kgf-cm | 60% | 33.5 | ≤25arcmin |

表中*指速比数值。 *-Reduction ratio

①—— 根据受力，行星轮可选用塑料。 Planet gears can be plasticaccording to torque.

## ● 外形尺寸 APPEARANCE SIZE




| | |
|---|---|
| 外壳材料 Housing material | 金属 steel |
| 齿轮材料 Gearwhddl material | 金属 steel ① |
| 输出轴承型式 Bearing at output | 滚动轴承 Ball bearings |
| 径向负载 Radial load (10mm from flange) | ≤10 Kgf |
| 轴向负载 shaft axial load | ≤5 Kgf |
| 径向间隙 Radial play of shaft | ≤0. 04mm |
| 轴向间隙 Thrust play of shaft | ≤0. 4mm |
| 连续运行时最高允许输入转速 Max permissible input speed at continuous working | ≤20000rpm |

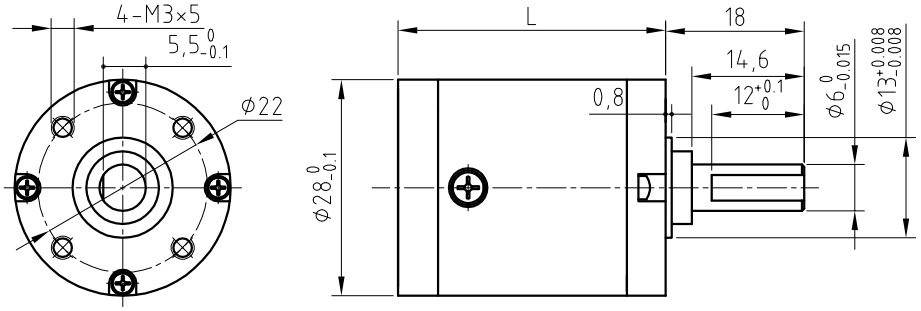
## ● 标准减速比型式 Gearboxes Specifications

| 减速比(部分) Reduction ratio (part) | 额定允许负载 rated tolerance torque | 瞬间允许负载 Max momentary tolerance torque | 效率 Efficiency | L (mm) | 背隙（无负载时） Backlash,at no-load |
|---|---|---|---|---|---|
| 3.75, 4.4, 5.4, 6.5 | 7.2Kgf-cm | 21.6Kgf-cm | 90% | 22.6 | ≤ 5arcmin |
| 14.1, 16.4, 19.2, 20.3, 23.7, 24.4,28.5, 29.2, 35.1, 42.3 | 9.6Kgf-cm | 28.8Kgf-cm | 81% | 27.6 | ≤10arcmin |
| 52.7, 61.7, 72.1, 84.3, 91.4, 103.8, 109.4, 125, 131.6, 154, 185.3, 228.15, 274.6 | 12Kgf-cm | 36Kgf-cm | 72% | 32.7 | ≤15arcmin |
| 197.8, 231.2, 284.8, 316.1, 333, 342.7, 389.3, 400.8, 455.2, 479.5, 493.6, 547.9 594.1, 674.8, 710.8, 812.3 855.6,1000, 1029.8, 1204 1483, 1785 | 14.5Kgf-cm | 43.5Kgf-cm | 65% | 37.7 | ≤20arcmin |
| 741.5, 867, 1013, 1067.9,1185 1248.6, 1386, 1502.9, 1620 1707, 1757, 1851, 1996,2055 2164, 2402, 2458,2530,2959 3027, 3644, 3728 ,4488,4592 5527, 6653, 8008, 9639,11602 | 14.5Kgf-cm | 43.5Kgf-cm | 60% | 42.8 | ≤25arcmin |

表中*指速比数值。 *-Reduction ratio

①—— 根据受力，行星轮可选用塑料。 Planet gears can be plasticaccording to torque.

## ● 外形尺寸 APPEARANCE SIZE




| | |
|---|---|
| 外壳材料 Housing material | 金属 steel |
| 齿轮材料 Gearxheel material | 金属 steel ① |
| 输出轴承型式 Bearing at output | 滚动轴承 Ball bearings |
| 径向负载 Radial load (10mm from flange) | ≤10 Kgf |
| 轴向负载 shaft axial load | ≤6 Kgf |
| 径向间隙 Radial play of shaft | ≤0.04mm |
| 轴向间隙 Thrust play of shaft | ≤0.4mm |
| 连续运行时最高允许输入转速 Max permissible input speed at continuous working | ≤18000rpm |

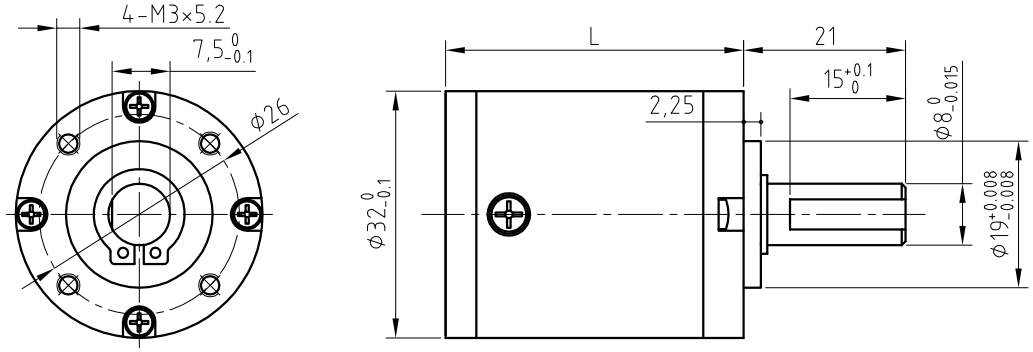
## ● 标准减速比型式 Gearboxes Specifications

| 减速比(部分) Reduction ratio (part) | 额定允许负载 rated tolerance torque | 瞬间允许负载 Max momentary tolerance torque | 效率 Efficiency | L (mm) | 背隙（无负载时） Backlash,at no-load |
|---|---|---|---|---|---|
| 4.4, 5.25, 6.7, 8.3 | 15.5Kgf-cm | 46.5Kgf-cm | 90% | 28.4 | ≤ 5arcmin |
| 15.1, 16.9, 18, 19.4, 20.1, 23.1<br>25.6, 27.6, 29.3, 31.8, 35, 36.5<br>43.5, 55.2, 68.7 | 21Kgf-cm | 63Kgf-cm | 81% | 34.7 | ≤10arcmin |
| 61.7, 77.1, 87.6, 100.6, 109, 120<br>125, 129, 134.1, 139.8, 144.7,<br>149.1, 154, 160.4, 166.8, 183.8<br>191.4, 211.7, 228.4, 233.3, 243<br>264.5, 290, 296.3, 368.2 | 26Kgf-cm | 78Kgf-cm | 72% | 41 | ≤15arcmin |
| 335.9, 344.8, 373.4, 375.5<br>385.5, 411.4, 417.4, 428.5, 431<br>447.2, 460, 466.7, 479.2, 494.8<br>511.3, 528, 535.7, 567.9, 571.7<br>590.3, 630, 639.2, 656.2, 677.6<br>705.8, 733.7, 749.6, 759.7, 800<br>811.7, 833.3, 842.1, 860.4, 894.4<br>931.7, 964.7, 994.3, 1005, 1027<br>1036,1069,1112,1136,1158,1199<br>1236,1276,1304,1329, 1382,1523<br>1556,1586,1755,1892,1933,1975<br>2014,2403,2455,3051,3792,4713 | 31Kgf-cm | 93Kgf-cm | 65% | 47.3 | ≤20arcmin |

表中*指速比数值。 *-Reduction ratio

①—— 根据受力，行星轮可选用塑料。 Planet gears can be plastic according to torque.

## ● 外形尺寸 APPEARANCE SIZE




| | |
|---|---|
| 外壳材料 Housing material | 金属 steel |
| 齿轮材料 | 金属 steel ① |
| 输出轴承型式 Bearing at output | 滚动轴承 Ball bearings |
| 径向负载 Radial load (10mm from flange) | ≤20 Kgf |
| 轴向负载 shaft axial load | ≤12 Kgf |
| 径向间隙 Radial play of shaft | ≤0.04mm |
| 轴向间隙 Thrust play of shaft | ≤0.4mm |
| 连续运行时最高允许输入转速 Max permissible input speed at continuous working | ≤15000rpm |

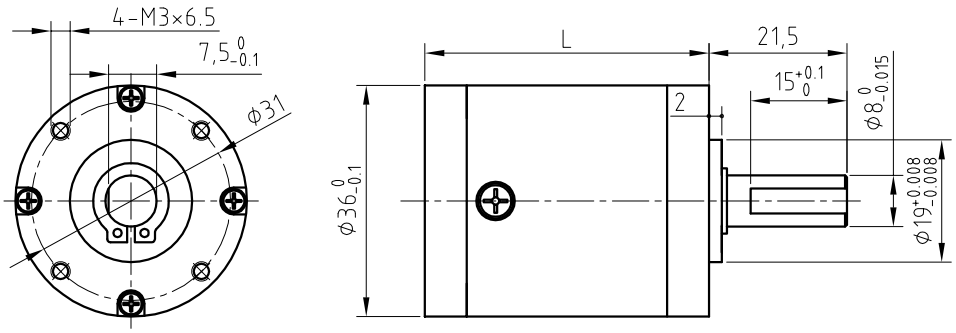
## ● 标准减速比型式 Gearboxes Specifications

| 减速比(部分) Reduction ratio (part) | 额定允许负载 rated tolerance torque | 瞬间允许负载 Max momentary tolerance torque | 效率 Efficiency | L (mm) | 背隙（无负载时） Backlash,at no-load |
|---|---|---|---|---|---|
| 4.4, 5.25, 6.7, 8.3 | 23.4Kgf-cm | 70.2Kgf-cm | 90% | 31.2 | ≤ 5arcmin |
| 15.1, 16.9, 18, 19.4, 20.1, 23.1<br>25.6, 27.6, 29.3, 31.8, 35, 36.5<br>43.5, 55.2, 68.7 | 31.0Kgf-cm | 93.0Kgf-cm | 81% | 38.7 | ≤10arcmin |
| 61.7, 77.1, 87.6, 100.6, 109, 120<br>125, 129, 134.1, 139.8, 144.7,<br>149.1, 154, 160.4, 166.8, 183.8<br>191.4, 211.7, 228.4, 233.3, 243<br>264.5, 290, 368.2, 457.7, 568.8 | 38.8Kgf-cm | 116.4Kgf-cm | 72% | 46.2 | ≤15arcmin |
| 335.9, 344.8, 373.4, 375.5<br>385.5, 411.4, 417.4, 428.5, 431<br>447.2, 460, 466.7, 479.2, 494.8<br>511.3, 528, 535.7, 567.9, 571.7<br>590.3, 630, 639.2, 656.2, 677.6<br>705.8, 733.7, 749.6, 759.7, 800<br>811.7, 833.3, 842.1, 860.4, 894.4<br>931.7, 964.7, 994.3, 1005, 1027<br>1036,1069,1112,1136,1158,1199<br>1236,1276,1304,1329, 1382,1523<br>1556,1586,1755,1892,1933,1975<br>2014,2403,2455,3051,3792,4713 | 46.5Kgf-cm | 139.5Kgf-cm | 65% | 53.7 | ≤20arcmin |

①—— 根据受力，行星轮可选用塑料。 Planet gears can be plastic according to torque.

# 精密型行星齿轮箱 PLANETARY GEAR HEAD 36P

## ● 外形尺寸 APPEARANCE SIZE




| | |
|---|---|
| 外壳材料 Housing material | 金属 steel |
| 齿轮材料 Gearxheel material | 金属 steel ① |
| 输出轴承型式 Bearing at output | 滚动轴承 Ball bearings |
| 径向负载 Radial load (10mm from flange) | ≤20 Kgf |
| 轴向负载 shaft axial load | ≤12 Kgf |
| 径向间隙 Radial play of shaft | ≤0.04mm |
| 轴向间隙 Thrust play of shaft | ≤0.4mm |
| 连续运行时最高允许输入转速 Max permissible input speed at continuous working | ≤15000rpm |

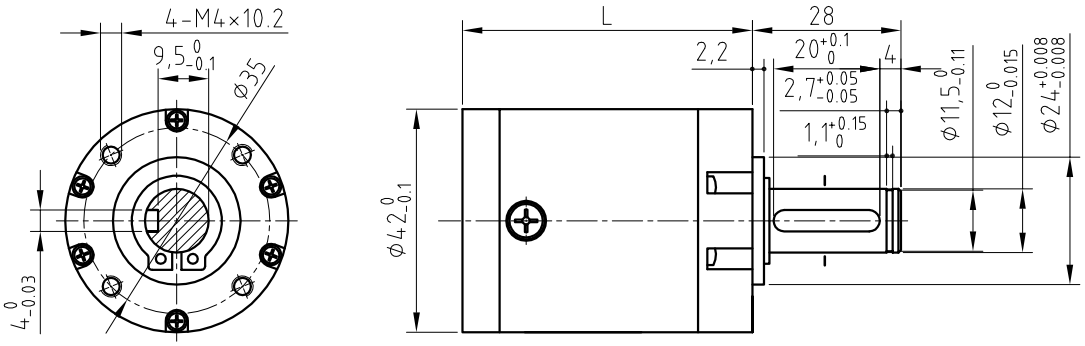
## ● 标准减速比型式 Gearboxes Specifications

| 减速比(部分) Reduction ratio (part) | 额定允许负载 rated tolerance torque | 瞬间允许负载 Max momentary tolerance torque | 效率 Efficiency | L (mm) | 背隙（无负载时） Backlash,at no-load |
|---|---|---|---|---|---|
| 4.3, 5.1, 6.3, 7.6 | 32.4Kgf-cm | 97.2Kgf-cm | 90% | 35.6 | ≤ 5arcmin |
| 14.7, 16.3, 17.3, 18.6, 19.2, 21.9<br>23.9, 25.8, 27.2, 28.9, 32, 32.9<br>38.7, 39.7, 48, 58.1 | 43.2Kgf-cm | 129.6Kgf-cm | 81% | 44.2 | ≤10arcmin |
| 65.6, 74.6, 81.4, 90.5, 92.6, 98.5<br>109, 112.1, 117.2, 124.6, 132, 138<br>141.8, 146.7, 150.4, 162.4, 166.9<br>171.2, 182, 196.5, 201.5, 207.1<br>220.3, 243.9, 250.7,295.2, 302.6<br>366.2, 443.2 | 54.0Kgf-cm | 162Kgf-cm | 72% | 52.8 | ≤15arcmin |
| 277.4, 315.8, 335.8, 342.8, 351<br>373.3, 382.2, 399.4, 413.2, 424.8<br>450, 459.3, 472.2, 483.4, 500.1<br>512.7, 537.4, 555.9, 569.1, 583.5<br>611.5, 620.6, 632.6, 648, 670<br>686.9, 706.2, 719.9, 744.7, 751.1<br>763.6, 785, 824.4, 831.4, 847.6<br>854.7, 869, 893.4, 924.2, 950.1<br>997.8, 1006, 1023, 1052, 1078<br>1081, 1119, 1147, 1238, 1269, 1272<br>1305, 1388, 1499, 1536,1580, 1680<br>1860,1907,2251,2307,2793,3380 | 64.8Kgf-cm | 194.4Kgf-cm | 65% | 61.4 | ≤20arcmin |

①—— 根据受力，行星轮可选用塑料。 Planet gears can be plastic according to torque.

# 精密型行星齿轮箱 PLANETARY GEAR HEAD 42P

## ● 外形尺寸 APPEARANCE SIZE




| | |
|---|---|
| 外壳材料 Housing material | 金属 steel |
| 齿轮材料 Gearxheel material | 金属 steel ① |
| 输出轴承型式 Bearing at output | 滚动轴承 Ball bearings |
| 径向负载 Radial load (10mm from flange) | ≤25 Kgf |
| 轴向负载 shaft axial load | ≤15 Kgf |
| 径向间隙 Radial play of shaft | ≤0.04mm |
| 轴向间隙 Thrust play of shaft | ≤0.4mm |
| 连续运行时最高允许输入转速 Max permissible input speed at continuous working | ≤12000rpm |

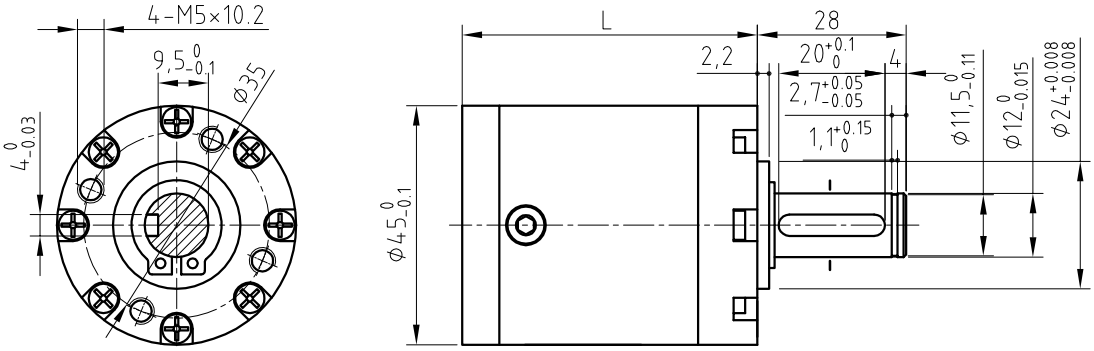
## ● 标准减速比型式 Gearboxes Specifications

| 减速比(部分) Reduction ratio (part) | 额定允许负载 rated tolerance torque | 瞬间允许负载 Max momentary tolerance torque | 效率 Efficiency | L (mm) | 背隙（无负载时） Backlash,at no-load |
|---|---|---|---|---|---|
| 4.3, 5.1, 6.3, 7.6 | 65Kgf-cm | 195Kgf-cm | 90% | 44.8 | ≤ 5arcmin |
| 14.7, 16.3, 17.3, 18.6, 19.2, 21.9<br>23.9, 25.8, 27.2, 28.9, 32, 32.9<br>38.7, 39.7, 48, 58.1 | 86Kgf-cm | 258Kgf-cm | 81% | 55.6 | ≤10arcmin |
| 65.6, 74.6, 81.4, 90.5, 92.6, 98.5<br>109, 112.1, 117.2, 124.6, 132, 138<br>141.8, 146.7, 150.4, 162.4, 166.9<br>171.2, 182, 196.5, 201.5, 207.1<br>220.3, 243.9, 250.7,295.2, 302.6<br>366.2, 443.2 | 108Kgf-cm | 324Kgf-cm | 72% | 66.4 | ≤15arcmin |
| 277.4, 315.8, 335.8, 342.8, 351<br>373.3, 382.2, 399.4, 413.2, 424.8<br>450, 459.3, 472.2, 483.4, 500.1<br>512.7, 537.4, 555.9, 569.1, 583.5<br>611.5, 620.6, 632.6, 648, 670<br>686.9, 706.2, 719.9, 744.7, 751.1<br>763.6, 785, 824.4, 831.4, 847.6<br>854.7, 869, 893.4, 924.2, 950.1<br>997.8, 1006, 1023, 1052, 1078<br>1081, 1119, 1147, 1238, 1269, 1272<br>1305, 1388, 1499, 1536,1580, 1680<br>1860,1907,2251,2307,2793,3380 | 130Kgf-cm | 390Kgf-cm | 65% | 77.2 | ≤20arcmin |

①—— 根据受力，行星轮可选用塑料。 Planet gears can be plastic according to torque.

# 精密型行星齿轮箱 PLANETARY GEAR HEAD 45P

## ● 外形尺寸 APPEARANCE SIZE




| | |
|---|---|
| 外壳材料 Housing material | 金属 steel |
| 齿轮材料 Gearxheel material | 金属 steel ① |
| 输出轴承型式 Bearing at output | 滚动轴承 Ball bearings |
| 径向负载 Radial load (10mm from flange) | ≤25 Kgf |
| 轴向负载 shaft axial load | ≤15 Kgf |
| 径向间隙 Radial play of shaft | ≤0.04mm |
| 轴向间隙 Thrust play of shaft | ≤0.4mm |
| 连续运行时最高允许输入转速 Max permissible input speed at continuous working | ≤12000rpm |

## ● 标准减速比型式 Gearboxes Specifications

| 减速比(部分) Reduction ratio (part) | 额定允许负载 rated tolerance torque | 瞬间允许负载 Max momentary tolerance torque | 效率 Efficiency | L (mm) | 背隙（无负载时） Backlash,at no-load |
|---|---|---|---|---|---|
| 4.3, 5.1, 6.3, 7.6 | 65Kgf-cm | 195Kgf-cm | 90% | 44.8 | ≤ 5arcmin |
| 14.7, 16.3, 17.3, 18.6, 19.2, 21.9 23.9, 25.8, 27.2, 28.9, 32, 32.9 38.7, 39.7, 48, 58.1 | 86Kgf-cm | 258Kgf-cm | 81% | 55.6 | ≤10arcmin |
| 65.6, 74.6, 81.4, 90.5, 92.6, 98.5 109, 112.1, 117.2, 124.6, 132, 138 141.8, 146.7, 150.4, 162.4, 166.9 171.2, 182, 196.5, 201.5, 207.1 220.3, 243.9, 250.7,295.2, 302.6 366.2, 443.2 | 108Kgf-cm | 324Kgf-cm | 72% | 66.4 | ≤15arcmin |
| 277.4, 315.8, 335.8, 342.8, 351 373.3, 382.2, 399.4, 413.2, 424.8 450, 459.3, 472.2, 483.4, 500.1 512.7, 537.4, 555.9, 569.1, 583.5 611.5, 620.6, 632.6, 648, 670 686.9, 706.2, 719.9, 744.7, 751.1 763.6, 785, 824.4, 831.4, 847.6 854.7, 869, 893.4, 924.2, 950.1 997.8, 1006, 1023, 1052, 1078 1081, 1119, 1147, 1238, 1269, 1272 1305, 1388, 1499, 1536,1580, 1680 1860,1907,2251,2307,2793,3380 | 130Kgf-cm | 390Kgf-cm | 65% | 77.2 | ≤20arcmin |

①—— 根据受力，行星轮可选用塑料。 Planet gears can be plastic according to torque.

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