

一体式行星减速 步进电机(脉冲型)

28/35/42/57系列

Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)

选型手册Catalog



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28 一体式步进驱动器 (脉冲型)

28 Integrated Stepper Motor Driver (Pulse Control)

UMIP28

产品概述 /Product Description

UMIP28 一体式脉冲型开环步进驱动器是重庆优摩特科技有限公司最新推出的一款新型电机驱动一体化电机驱动器，采用最新专用电机控制数字信号处理器，提升电机的综合性能、降低电机的发热程度和减小电机的振动，采用电机和驱动器一体式设计，安装更加紧凑，减少外界干扰。

UMIP28 带串口调试功能，通讯采用 MINI USB 接口，用户可通过 PC 端上位机调试软件设置细分、电流、工作模式等多种参数，极大地丰富了产品的实用功能，能够满足绝大多数场合的应用。

UMIP28 integrated pulse stepper motor driver is new designed for open-loop stepper motor by UMot. It adopts the latest dedicated motor control. It uses a digital signal processor to improve the performance of the motor, reduce the heat and vibration of the motor. It adopts an integrated design of the motor and driver to install more compact.

UMIP28 has serial port debugging function, and the communication adopts MINI USB interface. Users can set various parameters such as subdivision, current, working mode, etc. through PC host debugging software, which greatly enriches the practical functions of the product and can meet various application.

产品特点 /Feature

- 电机和驱动一体化，节省接线人工
No need to wire stepper motor with driver
- 体积小，便于安装
Small size, easy install
- 新一代 32 位 DSP 技术，平稳性佳、兼容性强、性价比高
New generation of 32-bit DSP technology, with good stability, strong compatibility and high cost performance
- 光隔离差分信号输入
Optically isolated differential signal input
- 内置微细分，低速平稳性极佳
Micro segmentation setting inside, stable work at low speed
- 脉冲响应频率最高可达 200KHz (更高可改)
Impulse response frequency max to 200KHz
(The max one can be changed)
- 细分设定范围 200-60000(可通过上位机设置任意微细分)
Subdivision setting range 200-60000
(Any micro-segment can be set through the controller)
- 精密电流控制使电机发热大幅降低
Precision current control significantly reduces motor heating
- 低振动低噪声
Low vibration and low noise
- 具有过压、欠压、缺相等报警保护功能
Overvoltage, undervoltage, phase loss protection
- 输入电压范围: DC12V~40V
Input voltage range: DC12V-40V
- 默认有效电流 1.0A(也可通过上位机设置任意电流值)
The default effective current is 1.0A
(any current value can also be set through the controller)



应用领域 /Application

适合各种中小型自动化设备和仪器，例如：医疗设备、检测设备、打标机、绘图仪等。满足客户低噪声、低发热、布线方便，抗干扰性更强等要求。

Suitable for various small and medium-sized automation equipment and instruments, such as: medical equipment, testing equipment, marking machines, plotters, etc. Satisfy customers with low noise, low heat, convenient wiring and anti-interference performance stronger requirements.

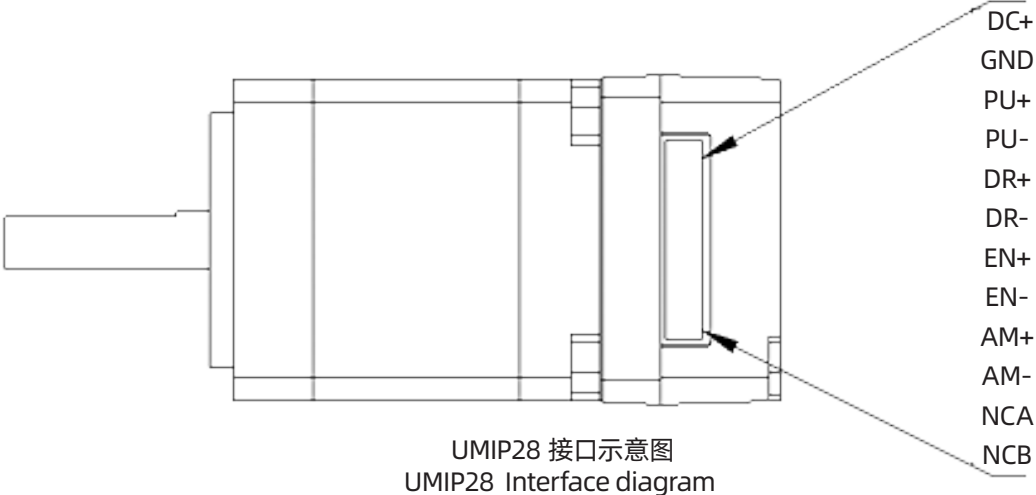
电气指标 /Specifications

| 说明 Description | UMIP28 | | | |
|----------------------------------|----------------|-----------------|------------|------------|
| | 最小值 Minimum | 典型值 Normally | 最大值 Max | 单位 unit |
| 输入电源电压 Input Voltage | 12 | 24 | 40 | VDC |
| 控制信号输入电流 Input signal current | 7 | 10 | 16 | mA |
| 步进脉冲频率 Frequency | 0 | - | 200 | KHz |
| 绝缘电阻 Insulation resistance | 50 | | | MΩ |

使用环境及参数 /Workingsh Environment

| 冷却方式 Cooling | | 自然冷却、风扇散热 Natural cooling, air cooling |
|-----------------------------|-------------------|---|
| 使用环境 Working Environment | 场合 Environment | 不能放在其他发热的设备旁, 要避免粉尘、油雾、腐蚀性气体, 湿度太大及强振动场所, 禁止有可燃气体和导电灰尘 Do not work to other heating equipment. Avoid dust, oil mist, corrosive gases, places with excessive humidity and strong vibrations. No combustibile gases are allowed.body and conductive dust |
| | 温度 Temperature | 0-50℃ |
| | 湿度 Humidity | 40-90%RH |
| | 振动 Vibration | 10~55Hz/0.15mm |
| 保存温度 Storage Temperature | | -20℃ ~65℃ |

接口示意图 /Interface diagram



接口描述 /Interface description

UMIP28 一体式脉冲型开环步进驱动器的电源接口与、信号控制接口和输出信号接口采用 JST1.25-12P 针座。接口具体定义看以下几个小节的介绍。
The power interface, signal control interface and output signal interface of UMIP28 integrated pulse open-loop stepper driver adopt JST1.25-12P pin socket. For the specific definition of the interface, please refer to the introduction of the following sections.

电源输入接口 /Power input interface

| 名称 Item | | 说明 Description | 功能 Function |
|------------|-----|-------------------------|---|
| VDC | DC+ | 电源接口 Power connector | 电源输入 DC12V~40V Power input DC12V-40V |
| | GND | | |

控制信号接口 /Control Signal Interface

| 名称 Item | 功能 Function |
|------------|--|
| PU+ | 脉冲控制信号: +5V-+24V 均可驱动, 上升沿有效, 每当脉冲由低变高时, 电机走一微步。为了可靠响应脉冲信号, 脉冲宽度应大于 2.5μs。 Pulse control signal: +5V-+24V can be driven, the rising edge is valid, every time the pulse changes from low to high, the motor takes a micro step. In order to respond reliably to pulse signals, the pulse width should be greater than 2.5μs. |
| PU- | |
| DR+ | 方向控制信号: +5V-+24V 均可驱动, 高 / 低电平信号。为保证电机可靠换向, 方向信号应先于脉冲信号至少 50μs 建立。 Direction control signal: +5V-+24V can be driven, high/low level signal. In order to ensure reliable commutation of the motor, the direction signal should first It takes at least 50μs for the pulse signal to establish. |
| DR- | |
| EN+ | 使能控制信号: +5V-+24V 均可驱动, 高 / 低电平信号。用于使能或禁止电机的运行。当 EN+ 接 +5V, EN- 接低电平时, 驱动器将切断电机各相的电流使电机处于自由状态, 此时步进脉冲不被响应。当不需用此功能时, 使能信号端悬空即可。另外, EN 端还可用于清除超差报警信号。 Enable control signal: +5V-+24V can be driven, high/low level signal. Used to enable or disable the operation of the motor. When EN+ When connected to +5V and EN- to low level, the driver will cut off the current of each phase of the motor to make the motor in a free state. At this time, the step pulse Not responded to. When this function is not needed, the enable signal terminal can be left floating. In addition, the EN terminal can also be used to clear the out-of-tolerance alarm signal. |
| EN- | |

输出信号接口 /Output signal interface

输出信号接口默认作为报警输出功能使用，当发生过压、欠压、缺相报警时，输出信号有效。此外，输出接口也可通过 PC 端上位机软件设置为到位输出、刹车控制输出功能使用，用户可根据实际使用情况做相应设置。
The output signal interface is used as the alarm output function by default. When overvoltage, undervoltage, and phase loss alarm occur, the output signal is valid. In addition, the output interface can also be set to in-position output and brake control output functions through the PC host software. Users can make corresponding settings according to actual usage.

| 名称 Item | 功能 Function |
|------------|--|
| AM+ | 报警信号输出: 过压、欠压、缺相报警发生时, 报警信号输出有效; Alarm signal output: When overvoltage, undervoltage, or phase loss alarm occurs, the alarm signal output is valid; 常开或常闭接法见 3.4 小节内描述; The normally open or normally closed connection method is described in Section 3.4; |
| AM- | 最大驱动电流 50mA。 Maximum drive current 50mA。 |

| 名称 Item | 功能 Function | 说明 Descption |
|--|--|--|
| 绿色 LED Green LED 红色 LED Red LED | 电源、报警指示灯、保存参数功能指示、恢复出厂设置功能指示、拨码状态切换指示; Power supply, alarm indicator light, save parameter function Can indicate, restore factory settings function instructions, Dial status switching indication; | 通电正常时绿灯常亮, 红灯熄灭。 保存参数、恢复出厂设置、拨码状态发生切换、设备发生异常时, 红绿灯交替闪烁报警, 其闪烁规律查看第五章; When the power is on normally, the green light is always on and the red light is off. When saving parameters, restoring factory settings, switching the dial status, or abnormal equipment occurs, the red and gre en lights flash alternately to alarm. For the flashing pattern, please refer to Chapter 5 |

输入控制信号接口电路 /Input control signal interface circuit

UMIP28 驱动器控制信号端采用差分式接口电路，可适用差分信号、单端共阴及共阳等接口，内置高速光电耦合器，在环境恶劣的场合，抗干扰能力强。接口电路示意图如图 3.2 所示。
The UMIP28 driver control signal end adopts a differential interface circuit, which can be used for differential signals, single-ended common cathode and common anode interfaces. It has a built-in high-speed photocoupler, which can be used in harsh environments.
Strong anti-interference ability. The schematic diagram of the interface circuit is shown in Figure 3.2.

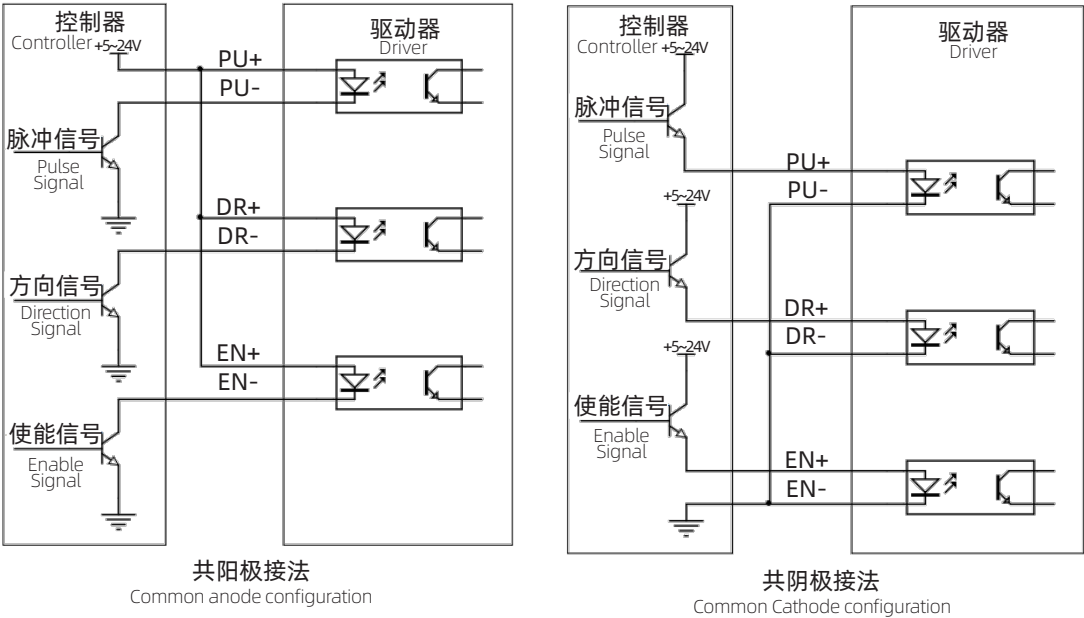
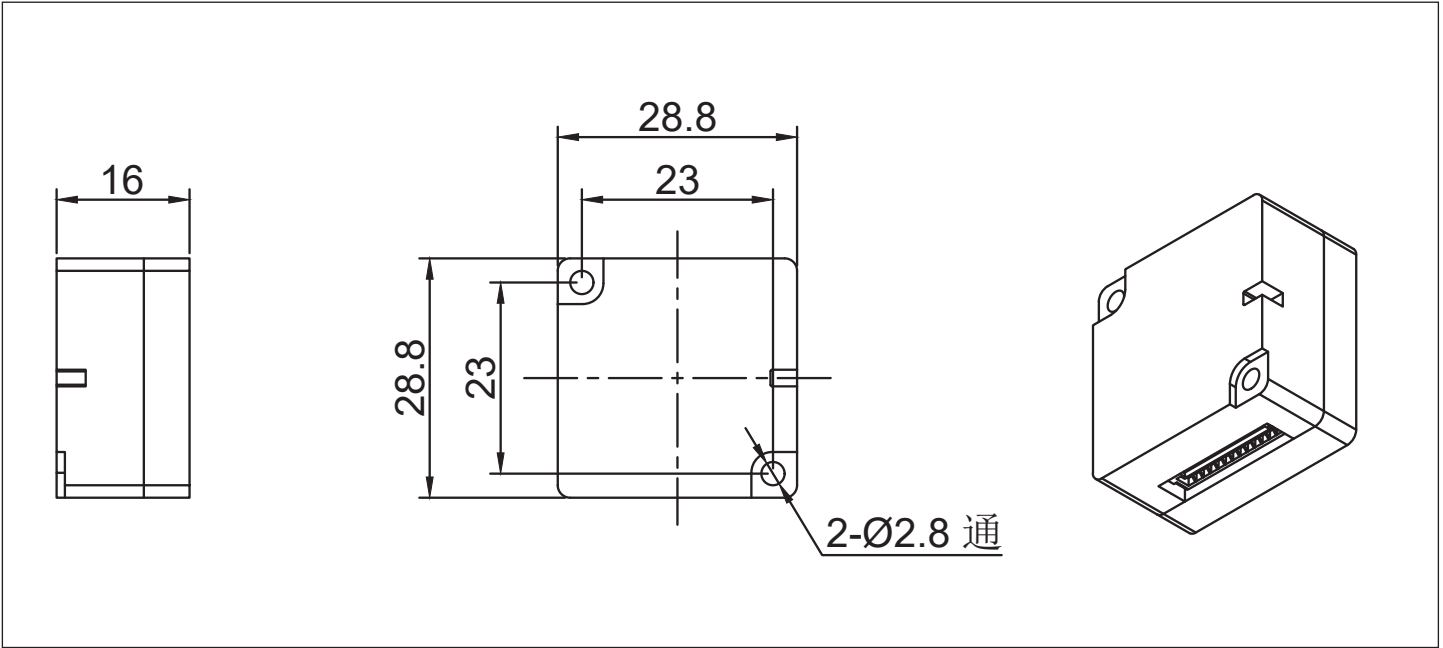


图 3.2 输入接口电路
Figure 3.2 Input interface circuit

尺寸图 /Dimensions



28 高精行星减速一体式步进电机（脉冲型）

28 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 15 arcmin)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 28HS0405 | 2.8 | 0.8 | 3.5 | 1.5 | 25 | 4 | 6 | 0.08 | 25.5 | ≤ 1: 100 |
| 28HS2401 | 3.88 | 0.67 | 4.2 | 4.2 | 70 | 4 | 15 | 0.13 | 32.5 | ≤ 1: 100 |
| 28HS5401 | 4.9 | 0.7 | 7 | 5 | 95 | 4 | 28 | 0.2 | 45 | ≤ 1: 100 |
| 28HS7401 | 6.03 | 0.67 | 9 | 7 | 110 | 4 | 45 | 0.25 | 52 | ≤ 1: 100 |

减速电机性能参数 (28HS0405) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 |
|--------------------------------------|-------|-----|-----|-----|-------|-----|-------|-----|-------|-----|------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 96 | 120 | 168 | 240 | 376 | 470 | 587.5 | 658 | 822.5 | 940 | 1175 | 1645 |
| 减速电机总高度 Total Length(L1+L2+16) | 74.5 | | | | 83 | | | | | | | |
| 减速电机总重量 Total Weight(g) | 198.2 | | | | 228.2 | | | | | | | |
| 减速级数 Reduction Stage | 1 | | | | 2 | | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 33.0 | | | | 41.5 | | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤15' | | | | ≤20' | | | | | | | |
| 效率 Efficiency | 96% | | | | 94% | | | | | | | |

| 减速比 Reduction Ratio | 64 | 80 | 100 | 125 | 140 | 175 | 200 |
|--------------------------------------|-------|------|------|--------|------|--------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 1440 | 1800 | 2550 | 2812.5 | 3150 | 3937.5 | 4500 |
| 减速电机总高度 Total Length(L1+L2+16) | 90.5 | | | | | | |
| 减速电机总重量 Total Weight(g) | 258.2 | | | | | | |
| 减速级数 Reduction Stage | 3 | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 49.0 | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤25' | | | | | | |
| 效率 Efficiency | 90% | | | | | | |

减速电机性能参数 (28HS2401) /Geared Stepper Motor Specifications

| | | | | | | | | | | | | |
|--------------------------------------|-------|-------|-------|-----|--------|------|------|--------|------|------|------|------|
| 减速比 Reduction Ratio | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 268.8 | 336 | 470.4 | 672 | 1052.8 | 1316 | 1645 | 1842.4 | 2303 | 2632 | 3000 | 3000 |
| 减速电机总高度 Total Length(L1+L2+16) | | 81.5 | | | | | | 90 | | | | |
| 减速电机总重量 Total Weight(g) | | 248.2 | | | | | | 278.2 | | | | |
| 减速级数 Reduction Stage | | 1 | | | | | | 2 | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 33.0 | | | | | | 41.5 | | | | |
| 背隙 (无负载时) Backlash At No-load | | ≤15' | | | | | | ≤20' | | | | |
| 效率 Efficiency | | 96% | | | | | | 94% | | | | |

| | | | | | | | |
|--------------------------------------|------|------|------|-------|------|------|------|
| 减速比 Reduction Ratio | 64 | 80 | 100 | 125 | 140 | 175 | 200 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 4032 | 5040 | 6000 | 6000 | 6000 | 6000 | 6000 |
| 减速电机总高度 Total Length(L1+L2+16) | | | | 97.5 | | | |
| 减速电机总重量 Total Weight(g) | | | | 308.2 | | | |
| 减速级数 Reduction Stage | | | | 3 | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | | | 49.0 | | | |
| 背隙 (无负载时) Backlash At No-load | | | | ≤25' | | | |
| 效率 Efficiency | | | | 90% | | | |

减速电机性能参数 (28HS5401) /Geared Stepper Motor Specifications

| | | | | | | | | | | | | |
|--------------------------------------|-------|-------|-------|-----|--------|------|--------|--------|--------|------|------|------|
| 减速比 Reduction Ratio | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 364.8 | 456 | 638.4 | 912 | 1422.8 | 1786 | 2232.5 | 2500.4 | 3125.5 | 3000 | 3000 | 3000 |
| 减速电机总高度 Total Length(L1+L2+16) | | 94 | | | | | | 102.5 | | | | |
| 减速电机总重量 Total Weight(g) | | 318.2 | | | | | | 348.2 | | | | |
| 减速级数 Reduction Stage | | 1 | | | | | | 2 | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 33.0 | | | | | | 41.5 | | | | |
| 背隙 (无负载时) Backlash At No-load | | ≤15' | | | | | | ≤20' | | | | |
| 效率 Efficiency | | 96% | | | | | | 94% | | | | |

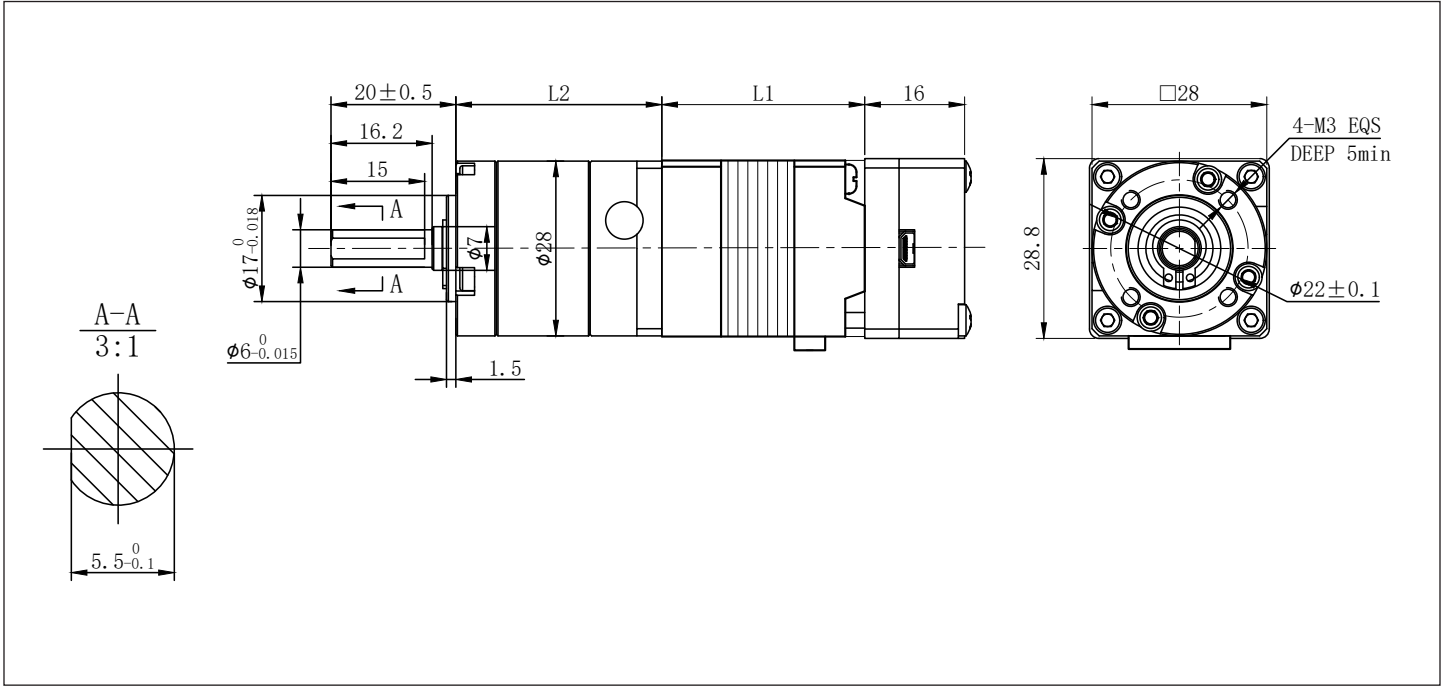
| | | | | | | | |
|--------------------------------------|------|------|------|-------|------|------|------|
| 减速比 Reduction Ratio | 64 | 80 | 100 | 125 | 140 | 175 | 200 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 5472 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 |
| 减速电机总高度 Total Length(L1+L2+16) | | | | 110 | | | |
| 减速电机总重量 Total Weight(g) | | | | 378.2 | | | |
| 减速级数 Reduction Stage | | | | 3 | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | | | 49.0 | | | |
| 背隙 (无负载时) Backlash At No-load | | | | ≤25' | | | |
| 效率 Efficiency | | | | 90% | | | |

减速电机性能参数 (28HS7401) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 |
|--------------------------------------|-------|-----|-------|------|--------|------|------|--------|------|------|------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 422.4 | 528 | 739.2 | 1000 | 1654.4 | 2068 | 2585 | 2895.2 | 3619 | 3000 | 3000 | 3000 |
| 减速电机总高度 Total Length(L1+L2+16) | 101 | | | | 109.5 | | | | | | | |
| 减速电机总重量 Total Weight(g) | 368.2 | | | | 398.2 | | | | | | | |
| 减速级数 Reduction Stage | 1 | | | | 2 | | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 33.0 | | | | 41.5 | | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤15' | | | | ≤20' | | | | | | | |
| 效率 Efficiency | 96% | | | | 94% | | | | | | | |

| 减速比 Reduction Ratio | 64 | 80 | 100 | 125 | 140 | 175 | 200 |
|--------------------------------------|-------|------|------|------|------|------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 |
| 减速电机总高度 Total Length(L1+L2+16) | 117 | | | | | | |
| 减速电机总重量 Total Weight(g) | 428.2 | | | | | | |
| 减速级数 Reduction Stage | 3 | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 49.0 | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤25' | | | | | | |
| 效率 Efficiency | 90% | | | | | | |

尺寸图 /Dimensions



28 传动行星减速一体式步进电机（脉冲型）

28 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 1.8°)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 28HS0405 | 2.8 | 0.8 | 3.5 | 1.5 | 25 | 4 | 6 | 0.08 | 25.5 | ≤ 1: 369 |
| 28HS2401 | 3.88 | 0.67 | 5.8 | 4.2 | 70 | 4 | 15 | 0.13 | 32.5 | ≤ 1: 369 |
| 28HS5401 | 4.9 | 0.7 | 7 | 5 | 95 | 4 | 28 | 0.2 | 45 | ≤ 1: 369 |
| 28HS7401 | 6.03 | 0.67 | 9 | 7 | 110 | 4 | 45 | 0.25 | 52 | ≤ 1: 369 |

减速电机性能参数 (28HS0405) / Geared Stepper Motor Specifications

| | | | | | | | | | | | | |
|--------------------------------------|-------|-----|-----|-------|-----|-----|------|-------|------|------|-------|------|
| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 | 189 | 254 | 369 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 83 | 117 | 284 | 385 | 547 | 931 | 1296 | 1825 | 2537 | 3119 | 4000 | 4000 |
| 减速电机总高度 Total Length(L1+L2+16)mm | 70.5 | | | 76.6 | | | | 84.5 | | | 91.4 | |
| 减速电机总重量 Total Weight(g) | 178.2 | | | 198.2 | | | | 218.2 | | | 238.2 | |
| 减速级数 Reduction Stage | 1 | | | 2 | | | | 3 | | | 4 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 29.0 | | | 36.1 | | | | 43.0 | | | 49.9 | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | | ≤1.2° | | | | ≤1.5° | | | ≤1.8° | |
| 效率 Efficiency | 90% | | | 81% | | | | 73% | | | 66% | |

减速电机性能参数 (28HS2401) / Geared Stepper Motor Specifications

| | | | | | | | | | | | | |
|--------------------------------------|-------|-------|-----|-------|------|------|------|-------|------|------|-------|------|
| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 | 189 | 254 | 369 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 234 | 327.5 | 794 | 1077 | 1531 | 2606 | 3628 | 4000 | 4000 | 4000 | 4000 | 4000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | 77.5 | | | 84.6 | | | | 91.5 | | | 98.4 | |
| 减速电机总重量 Total Weight(g) | 228.2 | | | 248.2 | | | | 268.2 | | | 288.2 | |
| 减速级数 Reduction Stage | 1 | | | 2 | | | | 3 | | | 4 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 29.0 | | | 36.1 | | | | 43.0 | | | 49.9 | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | | ≤1.2° | | | | ≤1.5° | | | ≤1.8° | |
| 效率 Efficiency | 90% | | | 81% | | | | 73% | | | 66% | |

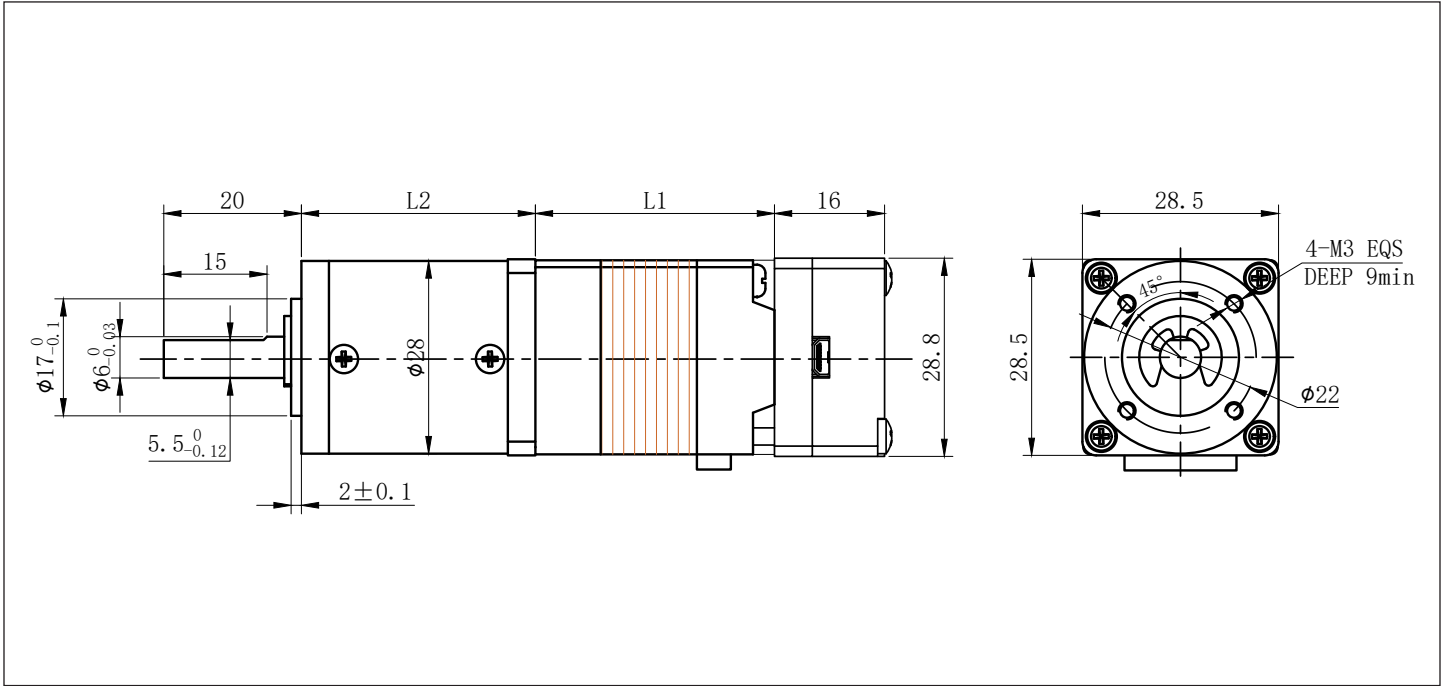
减速电机性能参数 (28HS5401) / Geared Stepper Motor Specifications

| | | | | | | | | | | | | |
|--------------------------------------|-------|-----|-------|------|------|-------|------|------|------|-------|------|------|
| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 | 189 | 254 | 369 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 317 | 443 | 1077 | 1462 | 2000 | 3537 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | 90 | | 97.1 | | | 104 | | | | 110.9 | | |
| 减速电机总重量 Total Weight(g) | 298.2 | | 318.2 | | | 338.2 | | | | 358.2 | | |
| 减速级数 Reduction Stage | 1 | | 2 | | | 3 | | | | 4 | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 29.0 | | 36.1 | | | 43.0 | | | | 49.9 | | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | ≤1.2° | | | ≤1.5° | | | | ≤1.8° | | |
| 效率 Efficiency | 90% | | 81% | | | 73% | | | | 66% | | |

减速电机性能参数 (28HS7401) / Geared Stepper Motor Specifications

| | | | | | | | | | | | | |
|--------------------------------------|-------|-----|-------|------|------|-------|------|------|------|-------|------|------|
| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 | 189 | 254 | 369 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 367 | 513 | 1247 | 1693 | 2000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | 97 | | 104.1 | | | 111 | | | | 117.9 | | |
| 减速电机总重量 Total Weight(g) | 348.2 | | 368.2 | | | 388.2 | | | | 408.2 | | |
| 减速级数 Reduction Stage | 1 | | 2 | | | 3 | | | | 4 | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 29.0 | | 36.1 | | | 43.0 | | | | 49.9 | | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | ≤1.2° | | | ≤1.5° | | | | ≤1.8° | | |
| 效率 Efficiency | 90% | | 81% | | | 73% | | | | 66% | | |

尺寸图 / Dimensions



28 整速比传动行星减速一体式步进电机 (脉冲型)

28 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 1.5°)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 28HS0405 | 2.8 | 0.8 | 3.5 | 1.5 | 25 | 4 | 6 | 0.08 | 25.5 | ≤ 1: 216 |
| 28HS2401 | 3.88 | 0.67 | 5.8 | 4.2 | 70 | 4 | 15 | 0.13 | 32.5 | ≤ 1: 216 |
| 28HS5401 | 4.9 | 0.7 | 7 | 5 | 95 | 4 | 28 | 0.2 | 45 | ≤ 1: 216 |
| 28HS7401 | 6.03 | 0.67 | 9 | 7 | 110 | 4 | 45 | 0.25 | 52 | ≤ 1: 216 |

减速电机性能参数 (28HS0405) /Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 |
|--------------------------------------|-------|-----|-------|-----|-------|------|-------|------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 90 | 135 | 324 | 486 | 729 | 1168 | 1752 | 2628 | 3942 |
| 减速电机总高度 Total Length(L1+L2+16)mm | 70.4 | | 77.3 | | 84.2 | | 84.2 | | 84.2 |
| 减速电机总重量 Total Weight(g) | 173.2 | | 195.2 | | 217.2 | | 217.2 | | 217.2 |
| 减速级数 Reduction Stage | 1 | | 2 | | 3 | | 3 | | 3 |
| 减速器长度 (L2) Gearbox Length(L2) mm | 28.9 | | 35.8 | | 42.7 | | 42.7 | | 42.7 |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | ≤1.2° | | ≤1.5° | | ≤1.5° | | ≤1.5° |
| 效率 Efficiency | 90% | | 81% | | 73% | | 73% | | 73% |

减速电机性能参数 (28HS2401) /Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 |
|--------------------------------------|-------|-----|-------|------|-------|------|-------|------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 252 | 378 | 907 | 1361 | 2041 | 3270 | 4906 | 5000 | 5000 |
| 减速电机总高度 Total Length(L1+L2+16)mm | 77.4 | | 84.3 | | 91.2 | | 91.2 | | 91.2 |
| 减速电机总重量 Total Weight(g) | 193.2 | | 215.2 | | 237.2 | | 237.2 | | 237.2 |
| 减速级数 Reduction Stage | 1 | | 2 | | 3 | | 3 | | 3 |
| 减速器长度 (L2) Gearbox Length(L2) mm | 28.9 | | 35.8 | | 42.7 | | 42.7 | | 42.7 |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | ≤1.2° | | ≤1.5° | | ≤1.5° | | ≤1.5° |
| 效率 Efficiency | 90% | | 81% | | 73% | | 73% | | 73% |

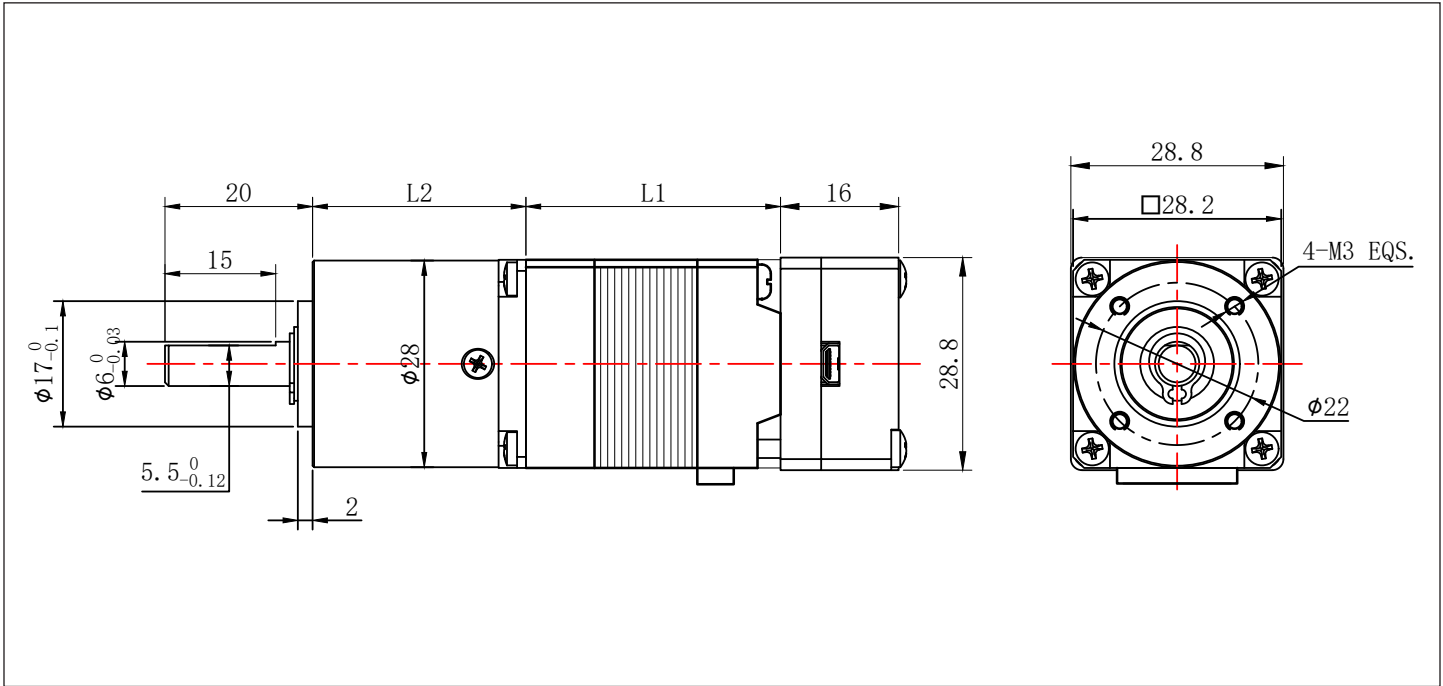
减速电机性能参数 (28HS5401) /Geared Stepper Motor Specifications

| | | | | | | | | | |
|--------------------------------------|-------|-----|-------|------|-------|------|------|------|------|
| 减速比 Reduction Ratio | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 342 | 513 | 1231 | 1847 | 2770 | 4438 | 5000 | 5000 | 5000 |
| 减速电机总高度 Total Length(L1+L2+16)mm | 89.9 | | 96.8 | | 103.7 | | | | |
| 减速电机总重量 Total Weight(g) | 293.2 | | 315.2 | | 337.2 | | | | |
| 减速级数 Reduction Stage | 1 | | 2 | | 3 | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 28.9 | | 35.8 | | 42.7 | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | ≤1.2° | | ≤1.5° | | | | |
| 效率 Efficiency | 90% | | 81% | | 73% | | | | |

减速电机性能参数 (28HS7401) /Geared Stepper Motor Specifications

| | | | | | | | | | |
|--------------------------------------|-------|-----|-------|------|-------|------|------|------|------|
| 减速比 Reduction Ratio | 4 | 6 | 16 | 24 | 36 | 64 | 96 | 144 | 216 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 489 | 733 | 1426 | 2138 | 3208 | 5000 | 5000 | 5000 | 5000 |
| 减速电机总高度 Total Length(L1+L2+16)mm | 96.9 | | 103.8 | | 110.7 | | | | |
| 减速电机总重量 Total Weight(g) | 343.2 | | 365.2 | | 387.2 | | | | |
| 减速级数 Reduction Stage | 1 | | 2 | | 3 | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 28.9 | | 35.8 | | 42.7 | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | ≤1.2° | | ≤1.5° | | | | |
| 效率 Efficiency | 90% | | 81% | | 73% | | | | |

尺寸图 /Dimensions



35 一体式步进驱动器 (脉冲型)

35 Integrated Stepper Motor Driver (Pulse Control)

UMIP35

产品概述 /Product Description

UMIP35 一体式脉冲型开环步进驱动器是重庆优摩特科技有限公司最新推出的一款新型电机驱动一体化电机驱动器，采用最新专用电机控制数字信号处理器，提升电机的综合性能、降低电机的发热程度和减小电机的振动，采用电机和驱动器一体式设计，安装更加紧凑，减少外界干扰。

UMIP35 带串口调试功能，通讯采用 MINI USB 接口，用户可通过 PC 端上位机调试软件设置细分、电流、工作模式等多种参数，极大地丰富了产品的实用功能，能够满足绝大多数场合的应用。

UMIP35 integrated pulse stepper motor driver is new designed for open-loop stepper motor by UMot. It adopts the latest dedicated motor control. It uses a digital signal processor to improve the performance of the motor, reduce the heat and vibration of the motor. It adopts an integrated design of the motor and driver to install more compact.

UMIP35 has serial port debugging function, and the communication adopts MINI USB interface. Users can set various parameters such as subdivision, current, working mode, etc. through PC host debugging software, which greatly enriches the practical functions of the product and can meet various application.

产品特点 /Feature

- 电机和驱动一体化，节省接线人工
No need to wire stepper motor with driver
- 体积小，便于安装
Small size, easy install
- 新一代 32 位 DSP 技术，平稳性佳、兼容性强、性价比高
New generation of 32-bit DSP technology, with good stability, strong compatibility and high cost performance
- 光隔离差分信号输入
Optically isolated differential signal input
- 内置微细分，低速平稳性极佳
Micro segmentation setting inside, stable work at low speed
- 脉冲响应频率最高可达 200KHz (更高可改)
Impulse response frequency max to 200KHz
(The max one can be changed)
- 细分设定范围 200-60000(可通过上位机设置任意微细分)
Subdivision setting range 200-60000
(Any micro-segment can be set through the controller)
- 精密电流控制使电机发热大幅降低
Precision current control significantly reduces motor heating
- 低振动低噪声
Low vibration and low noise
- 具有过压、欠压、缺相等报警保护功能
Overvoltage, undervoltage, phase loss protection
- 输入电压范围: DC12V~40V
Input voltage range: DC12V-40V
- 默认有效电流 1.0A(也可通过上位机设置任意电流值)
The default effective current is 1.0A
(any current value can also be set through the controller)



应用领域 /Application

适合各种中小型自动化设备和仪器，例如：医疗设备、检测设备、打标机、绘图仪等。满足客户低噪声、低发热、布线方便，抗干扰性更强等要求。

Suitable for various small and medium-sized automation equipment and instruments, such as: medical equipment, testing equipment, marking machines, plotters, etc. Satisfy customers with low noise, low heat, convenient wiring and anti-interference performance stronger requirements.

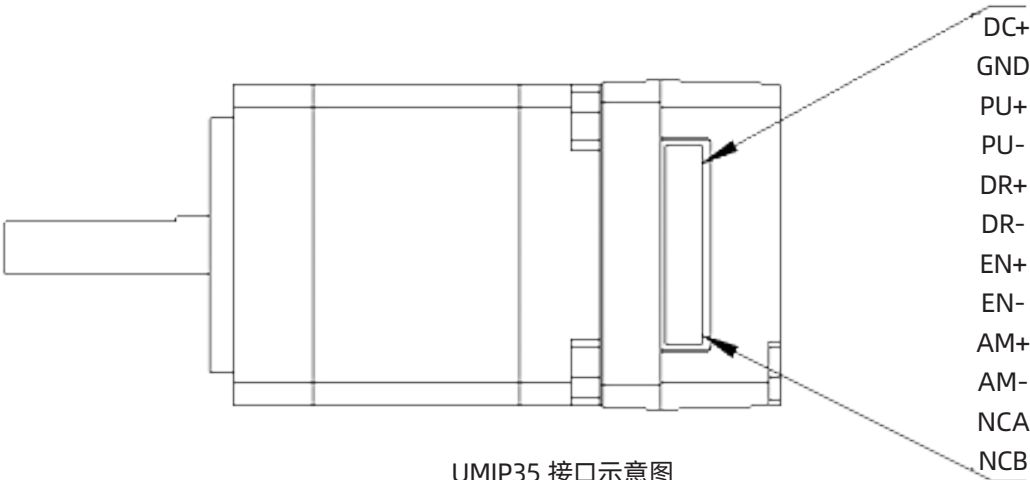
电气指标 /Specifications

| 说明 Description | UMIP28 | | | |
|----------------------------------|----------------|-----------------|------------|------------|
| | 最小值 Minimum | 典型值 Normally | 最大值 Max | 单位 unit |
| 输入电源电压 Input Voltage | 12 | 24 | 40 | VDC |
| 控制信号输入电流 Input signal current | 7 | 10 | 16 | mA |
| 步进脉冲频率 Frequency | 0 | - | 200 | KHz |
| 绝缘电阻 Insulation resistance | 50 | | | MΩ |

使用环境及参数 /Workingh Environment

| 冷却方式 Cooling | | 自然冷却、风扇散热 Natural cooling, air cooling |
|-----------------------------|-------------------|---|
| 使用环境 Working Environment | 场合 Environment | 不能放在其他发热的设备旁, 要避免粉尘、油雾、腐蚀性气体, 湿度太大及强振动场所, 禁止有可燃气体和导电灰尘 Do not work to other heating equipment. Avoid dust, oil mist, corrosive gases, places with excessive humidity and strong vibrations. No combustibile gases are allowed.body and conductive dust |
| | 温度 Temperature | 0-50℃ |
| | 湿度 Humidity | 40-90%RH |
| | 振动 Vibration | 10~55Hz/0.15mm |
| 保存温度 Storage Temperature | | -20℃ ~65℃ |

接口示意图 /Interface diagram



UMIP35 接口示意图
UMIP35 Interface diagram

接口描述 /Interface description

UMIP35 一体式脉冲型开环步进驱动器的电源接口与、信号控制接口和输出信号接口采用 JST1.25-12P 针座。接口具体定义看以下几个小节介绍。

The power interface, signal control interface and output signal interface of UMIP35 integrated pulse open-loop stepper driver adopt JST1.25-12P pin socket. For the specific definition of the interface, please refer to the introduction of the following sections.

电源输入接口 /Power input interface

| 名称 Item | | 说明 Descption | 功能 Function |
|------------|-----|-------------------------|---|
| VDC | DC+ | 电源接口 Power connector | 电源输入 DC12V~40V Power input DC12V-40V |
| | GND | | |

控制信号接口 /Control Signal Interface

| 名称 Item | 功能 Function |
|------------|--|
| PU+ | 脉冲控制信号：+5V-+24V 均可驱动，上升沿有效，每当脉冲由低变高时，电机走一微步。为了可靠响应脉冲信号，脉冲宽度应大于 2.5μs。 Pulse control signal: +5V-+24V can be driven, the rising edge is valid, every time the pulse changes from low to high, the motor takes a micro step.In order to respond reliably to pulse signals, the pulse width should be greater than 2.5μs. |
| PU- | |
| DR+ | 方向控制信号：+5V-+24V 均可驱动，高 / 低电平信号。为保证电机可靠换向，方向信号应先于脉冲信号至少 50μs 建立。 Direction control signal: +5V-+24V can be driven, high/low level signal. In order to ensure reliable commutation of the motor, the direction signal should first It takes at least 50μs for the pulse signal to establish. |
| DR- | |
| EN+ | 使能控制信号：+5V-+24V 均可驱动，高 / 低电平信号。用于使能或禁止电机的运行。当 EN+ 接 +5V，EN- 接低电平时，驱动器将切断电机各相的电流使电机处于自由状态，此时步进脉冲不被响应。当不需用此功能时，使能信号端悬空即可。另外，EN端还可用于清除超差报警信号。 Enable control signal: +5V-+24V can be driven, high/low level signal. Used to enable or disable the operation of the motor. When EN+ When connected to +5V and EN- to low level, the driver will cut off the current of each phase of the motor to make the motor in a free state. At this time, the step pulse Not responded to. When this function is not needed, the enable signal terminal can be left floating. In addition, the EN terminal can also be used to clear the out-of-tolerance alarm signal. |
| EN- | |

输出信号接口 /Output signal interface

输出信号接口默认作为报警输出功能使用，当发生过压、欠压、缺相报警时，输出信号有效。此外，输出接口也可通过 PC 端上位机软件设置为到位输出、刹车控制输出功能使用，用户可根据实际使用情况做相应设置。

The output signal interface is used as the alarm output function by default. When overvoltage, undervoltage, and phase loss alarm occur, the output signal is valid. In addition, the output interface can also be set to in-position output and brake control output functions through the PC host software. Users can make corresponding settings according to actual usage.

| 名称 Item | 功能 Function |
|------------|--|
| AM+ | 报警信号输出: 过压、欠压、缺相报警发生时, 报警信号输出有效; Alarm signal output: When overvoltage, undervoltage, or phase loss alarm occurs, the alarm signal output is valid; 常开或常闭接法见 3.4 小节内描述; The normally open or normally closed connection method is described in Section 3.4; |
| AM- | 最大驱动电流 50mA。 Maximum drive current 50mA。 |

| 名称 Item | 功能 Function | 说明 Descption |
|--|--|--|
| 绿色 LED Green LED 红色 LED Red LED | 电源、报警指示灯、保存参数功能指示、恢复出厂设置功能指示、拨码状态切换指示; Power supply, alarm indicator light, save parameter function Can indicate, restore factory settings function instructions, Dial status switching indication; | 通电正常时绿灯常亮,红灯熄灭。 保存参数、恢复出厂设置、拨码状态发生切换、设备发生异常时, 红绿灯交替闪烁报警, 其闪烁规律查看第五章节; When the power is on normally, the green light is always on and the red light is off. When saving parameters, restoring factory settings, switching the dial status, or abnormal equipment occurs, the red and gre en lights flash alternately to alarm. For the flashing pattern, please refer to Chapter 5 |

输入控制信号接口电路 /Input control signal interface circuit

UMIP35 驱动器控制信号端采用差分式接口电路，可适用差分信号、单端共阴及共阳等接口，内置高速光电耦合器，在环境恶劣的场合，抗干扰能力强。接口电路示意图如图 3.2 所示。

The UMIP35 driver control signal end adopts a differential interface circuit, which can be used for differential signals, single-ended common cathode and common anode interfaces. It has a built-in high-speed photocoupler, which can be used in harsh environments.

Strong anti-interference ability. The schematic diagram of the interface circuit is shown in Figure 3.2.

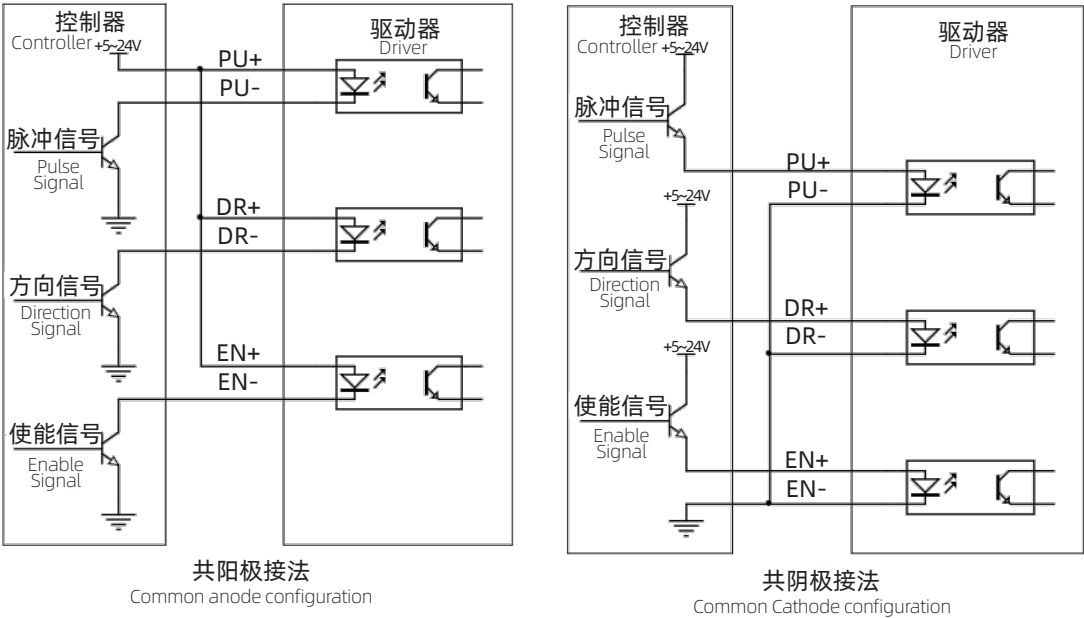
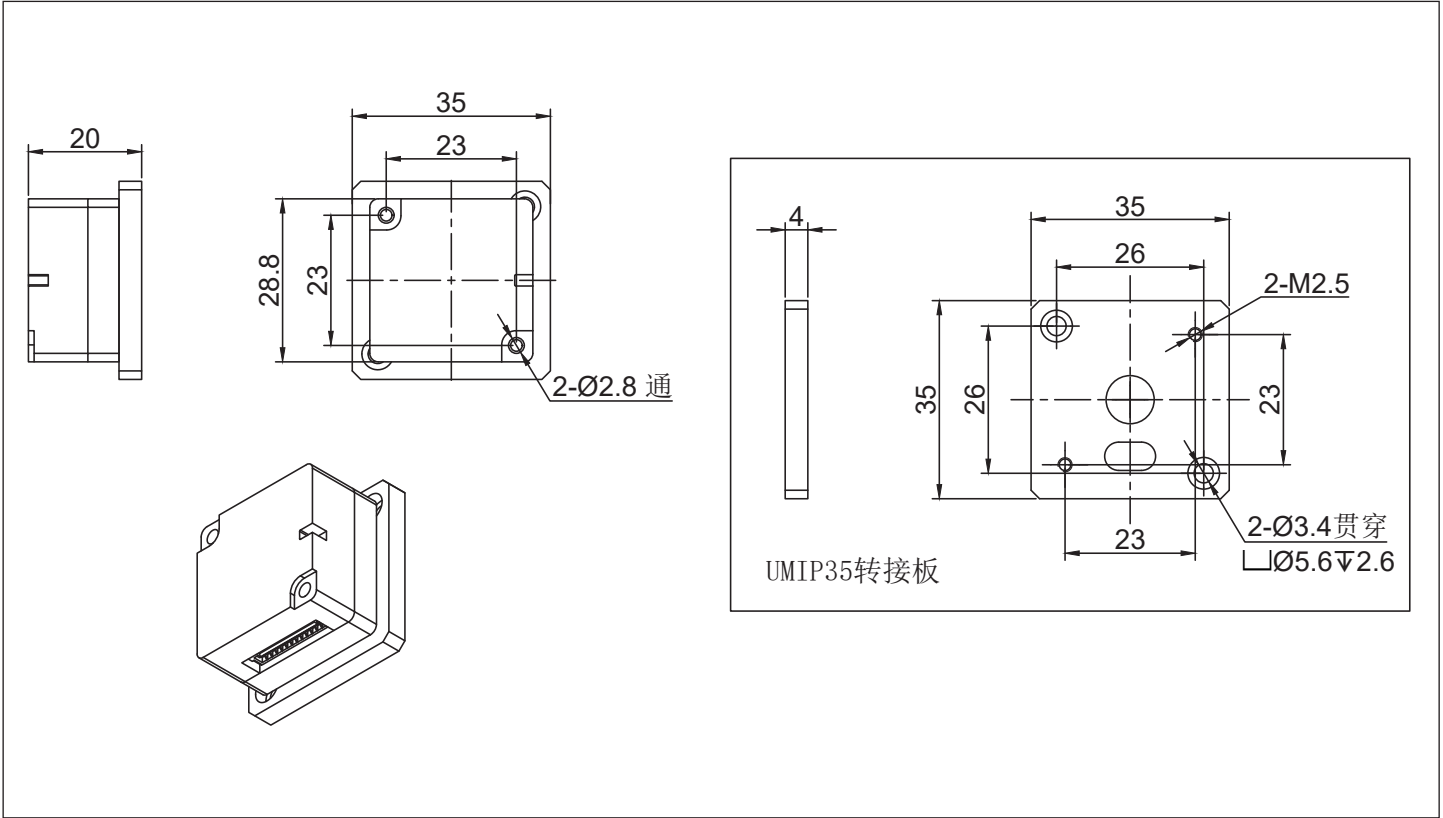


图 3.2 输入接口电路
Figure 3.2 Input interface circuit

尺寸图 /Dimensions



35 高精精密行星减速一体式步进电机 (脉冲型)

35 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 15 arcmin)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 35HSH2408 | 4.5 | 1.0 | 4.5 | 5.5 | 200 | 4 | 25 | 0.15 | 28 | ≤ 1: 210 |
| 35HSH5401 | 4.5 | 1.0 | 4.5 | 7 | 250 | 4 | 35 | 0.25 | 38.5 | ≤ 1: 210 |
| 35HSH6403 | 2.77 | 1.68 | 1.65 | 2.5 | 320 | 4 | 40 | 0.28 | 48 | ≤ 1: 210 |

减速电机性能参数 (35HSH2408) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3 | 4 | 5 | 6 | 7 | 9 | 15 | 20 | 25 | 30 | 35 | 42 |
|--------------------------------------|------|-----|-----|------|------|------|------|------|------|------|------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 576 | 768 | 960 | 1152 | 1344 | 1692 | 2820 | 3760 | 4700 | 5640 | 6580 | 7000 |
| 减速电机总高度 Total Length(L1+L2+20) | 88 | | | | | 97.5 | | | | | | |
| 减速电机总重量 Total Weight(g) | 349 | | | | | 399 | | | | | | |
| 减速级数 Reduction Stage | 1 | | | | | 2 | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 40.0 | | | | | 49.5 | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤15' | | | | | ≤20' | | | | | | |
| 效率 Efficiency | 96% | | | | | 94% | | | | | | |

| 减速比 Reduction Ratio | 45 | 100 | 120 | 140 | 150 | 175 | 210 |
|--------------------------------------|------|------|------|------|------|------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 8100 | 9000 | 9000 | 9000 | 8500 | 8500 | 8500 |
| 减速电机总高度 Total Length(L1+L2+20) | 107 | | | | | | |
| 减速电机总重量 Total Weight(g) | 459 | | | | | | |
| 减速级数 Reduction Stage | 3 | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 59.0 | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤25' | | | | | | |
| 效率 Efficiency | 90% | | | | | | |

减速电机性能参数 (35HSH5401) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3 | 4 | 5 | 6 | 7 | 9 | 15 | 20 | 25 | 30 | 35 | 42 |
|--------------------------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 720 | 960 | 1200 | 1440 | 1680 | 2115 | 3525 | 4700 | 5875 | 7000 | 7000 | 7000 |
| 减速电机总高度 Total Length(L1+L2+20) | | | 98.5 | | | | | | 108 | | | |
| 减速电机总重量 Total Weight(g) | | | 449 | | | | | | 499 | | | |
| 减速级数 Reduction Stage | | | 1 | | | | | | 2 | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | | 40.0 | | | | | | 49.5 | | | |
| 背隙 (无负载时) Backlash At No-load | | | ≤15' | | | | | | ≤20' | | | |
| 效率 Efficiency | | | 96% | | | | | | 94% | | | |

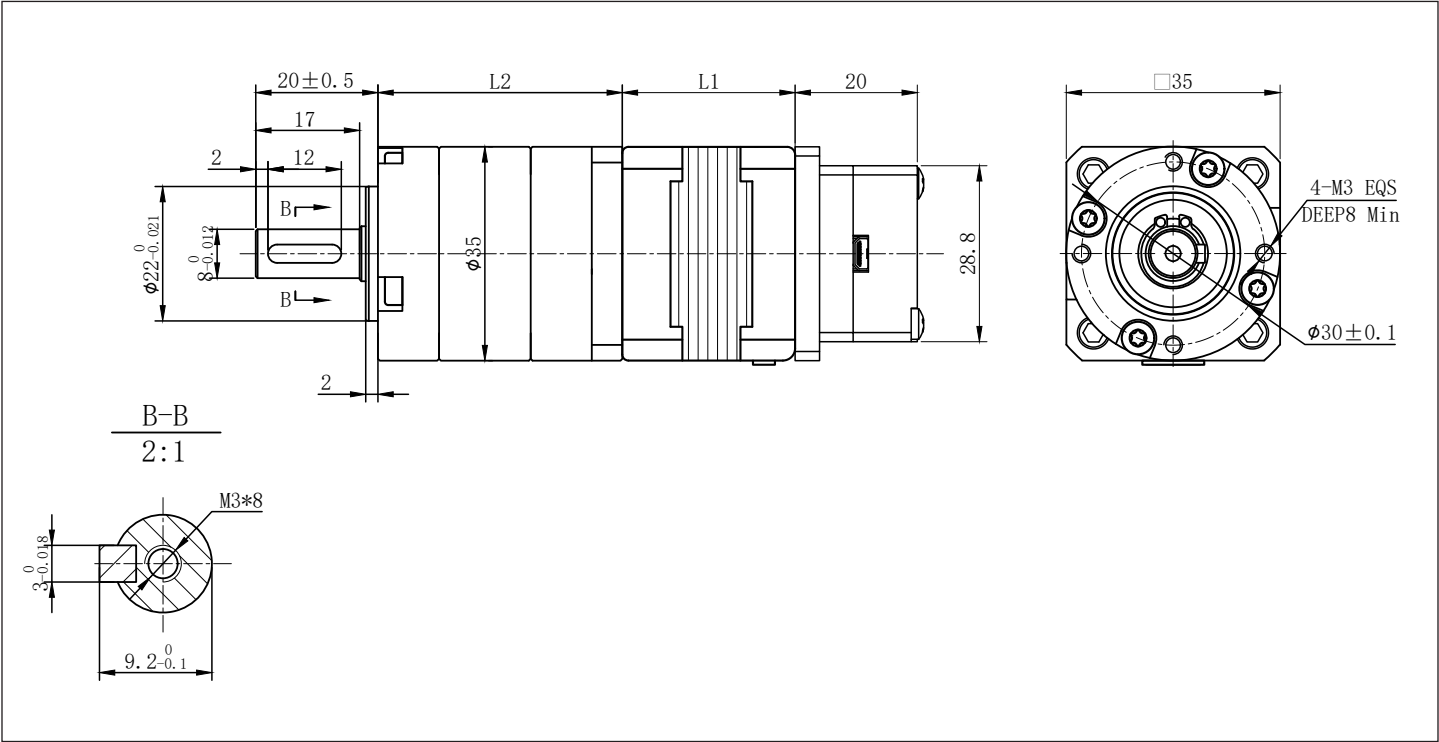
| | | | | | | | |
|--------------------------------------|-------|------|------|-------|------|------|------|
| 减速比 Reduction Ratio | 45 | 100 | 120 | 140 | 150 | 175 | 210 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 10000 | 9000 | 9000 | 9000 | 8500 | 8500 | 8500 |
| 减速电机总高度 Total Length(L1+L2+20) | | | | 117.5 | | | |
| 减速电机总重量 Total Weight(g) | | | | 559 | | | |
| 减速级数 Reduction Stage | | | | 3 | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | | | 59.0 | | | |
| 背隙 (无负载时) Backlash At No-load | | | | ≤25' | | | |
| 效率 Efficiency | | | | 90% | | | |

减速电机性能参数 (35HSH6403) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3 | 4 | 5 | 6 | 7 | 9 | 15 | 20 | 25 | 30 | 35 | 42 |
|--------------------------------------|-------|--------|------|--------|------|--------|------|------|-------|------|------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 921.6 | 1228.8 | 1536 | 1843.2 | 2000 | 2707.2 | 4512 | 6016 | 7520 | 7000 | 7000 | 7000 |
| 减速电机总高度 Total Length(L1+L2+20) | | | 108 | | | | | | 117.5 | | | |
| 减速电机总重量 Total Weight(g) | | | 479 | | | | | | 529 | | | |
| 减速级数 Reduction Stage | | | 1 | | | | | | 2 | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | | 40.0 | | | | | | 49.5 | | | |
| 背隙 (无负载时) Backlash At No-load | | | ≤15' | | | | | | ≤20' | | | |
| 效率 Efficiency | | | 96% | | | | | | 94% | | | |

| | | | | | | | |
|--------------------------------------|-------|------|------|------|------|------|------|
| 减速比 Reduction Ratio | 45 | 100 | 120 | 140 | 150 | 175 | 210 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 10000 | 9000 | 9000 | 9000 | 8500 | 8500 | 8500 |
| 减速电机总高度 Total Length(L1+L2+20) | | | | 127 | | | |
| 减速电机总重量 Total Weight(g) | | | | 589 | | | |
| 减速级数 Reduction Stage | | | | 3 | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | | | 59.0 | | | |
| 背隙 (无负载时) Backlash At No-load | | | | ≤25' | | | |
| 效率 Efficiency | | | | 90% | | | |

尺寸图 /Dimensions



35 传动行星减速一体式步进电机 (脉冲型)

35 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 1.8°)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 35HS2408 | 4.5 | 1.0 | 4.5 | 5.5 | 200 | 4 | 25 | 0.15 | 28 | ≤ 1: 139 |
| 35HS5401 | 4.5 | 1.0 | 4.5 | 7 | 250 | 4 | 35 | 0.25 | 38.5 | ≤ 1: 139 |

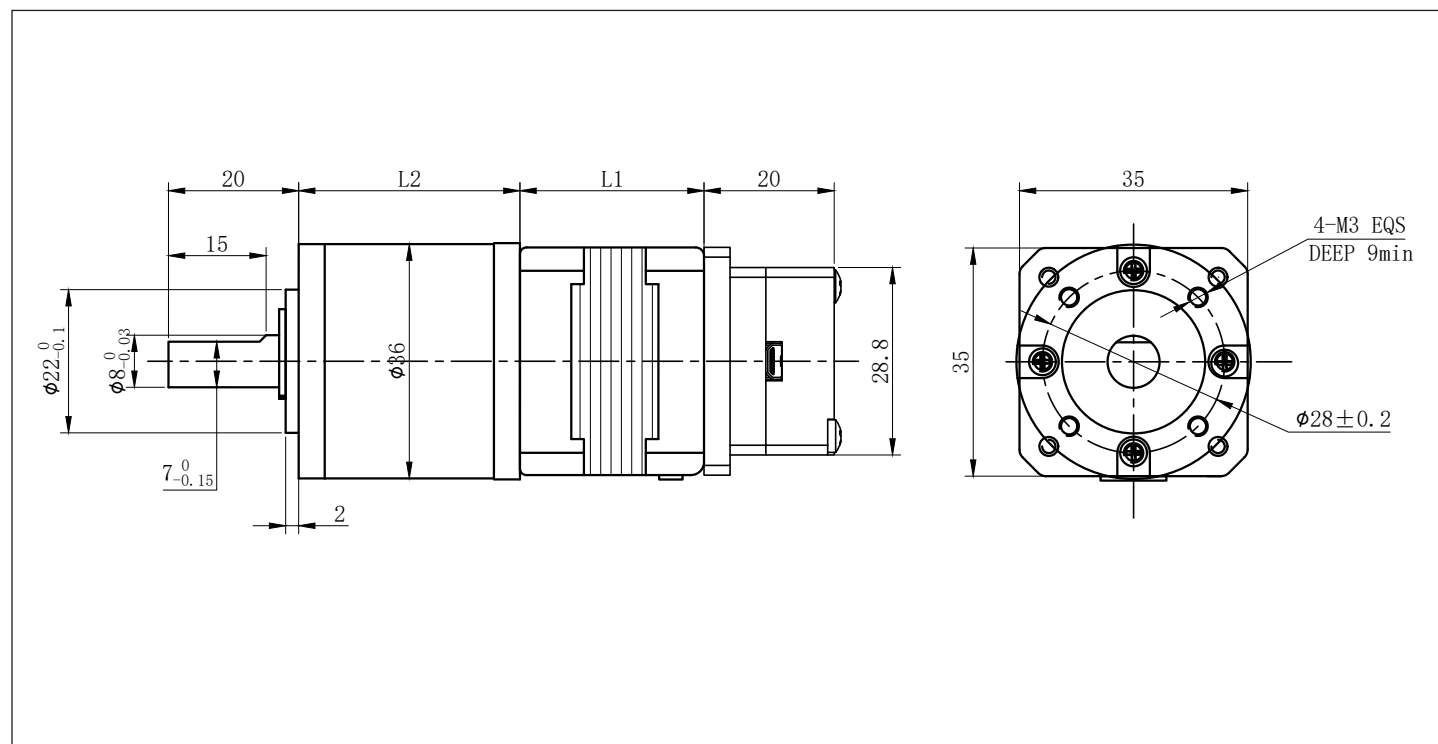
减速电机性能参数 (35HS2408) / Geared Stepper Motor Specifications

| | | | | | | | | | |
|--------------------------------------|------|-----|------|-------|------|------|------|-------|------|
| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 668 | 932 | 2268 | 3000 | 3000 | 6000 | 6000 | 6000 | 6000 |
| 减速电机总高度 Total Length(L1+L2+16)mm | 75 | | | 82.2 | | | | 89.1 | |
| 减速电机总重量 Total Weight(g) | 319 | | | 359 | | | | 399 | |
| 减速级数 Reduction Stage | 1 | | | 2 | | | | 3 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 27.0 | | | 34.2 | | | | 41.1 | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | | ≤1.2° | | | | ≤1.5° | |
| 效率 Efficiency | 90% | | | 81% | | | | 73% | |

减速电机性能参数 (35HS5401) / Geared Stepper Motor Specifications

| | | | | | | | | | |
|--------------------------------------|------|------|------|-------|------|------|------|-------|------|
| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 835 | 1166 | 2835 | 3000 | 3000 | 6000 | 6000 | 6000 | 6000 |
| 减速电机总高度 Total Length(L1+L2+16)mm | 85.5 | | | 92.7 | | | | 99.6 | |
| 减速电机总重量 Total Weight(g) | 419 | | | 459 | | | | 499 | |
| 减速级数 Reduction Stage | 1 | | | 2 | | | | 3 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 27.0 | | | 34.2 | | | | 41.1 | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | | ≤1.2° | | | | ≤1.5° | |
| 效率 Efficiency | 90% | | | 81% | | | | 73% | |

尺寸图 /Dimensions



42 一体式步进驱动器（脉冲型）

42 Integrated Stepper Motor Driver (Pulse Control)

UMIP42

产品概述 /Product Description

UMIP42 一体式脉冲型开环步进驱动器是重庆优摩特科技有限公司最新推出的一款新型电机驱动一体化电机驱动器，采用最新专用电机控制数字信号处理器，提升电机的综合性能、降低电机的发热程度和减小电机的振动，采用电机和驱动器一体式设计，安装更加紧凑，减少外界干扰。

UMIP42 integrated pulse stepper motor driver is new designed for open-loop stepper motor by UMot. It adopts the latest dedicated motor control.It uses a digital signal processor to improve the performance of the motor, reduce the heat and vibration of the motor. It adopts an integrated design of the motor and driver to install more compact.

产品特点 /Feature

- 电机和驱动一体化，节省接线人工
No need to wire stepper motor with driver
- 体积小，便于安装
Small size,easy install
- 新一代 32 位 DSP 技术，平稳性佳、兼容性强、性价比高
New generation of 32-bit DSP technology, with good stability, strong compatibility and high cost performance
- 外置拨码设置驱动器电流、工作模式、细分
External dial code sets driver current, working mode, subdivision
- 光隔离差分信号输入
Optically isolated differential signal input
- 内置微细分，低速平稳性极佳
Micro segmentation setting inside,stable work at low speed
- 脉冲响应频率最高可达 200KHz
Impulse response frequency max to 200KHz
- 细分设定范围 200-40000、自发脉冲速度设定范围 30-720r/min
Subdivision setting range 200-40000, spontaneous pulse speed setting range 30-720r/min
- 精密电流控制使电机发热大幅降低
Precision current control significantly reduces motor heating
- 低振动低噪声
Low vibration and low noise
- 具有过压、欠压、缺相等报警保护功能
Overvoltage, undervoltage, phase loss protection
- 输入电压范围：DC12V~40V
Input voltage range:DC12V-40V



应用领域 /Application

适合各种中小型自动化设备和仪器，例如：医疗设备、检测设备、打标机、绘图仪等。满足客户低噪声、低发热、布线方便，抗干扰性更强等要求。

Suitable for various small and medium-sized automation equipment and instruments, such as: medical equipment, testing equipment, marking machines, plotters, etc. Satisfy customers with low noise, low heat, convenient wiring and anti-interference performance stronger requirements.

电气指标 /Specifications

| 说明 Description | UMIP42 | | | |
|----------------------------------|----------------|-----------------|------------|------------|
| | 最小值 Minimum | 典型值 Normally | 最大值 Max | 单位 unit |
| 输入电源电压 Input Voltage | 12 | 24 | 40 | VDC |
| 控制信号输入电流 Input signal current | 7 | 10 | 16 | mA |
| 步进脉冲频率 Frequency | 0 | | 200 | KHz |
| 绝缘电阻 Insulation resistance | 50 | | | MΩ |

使用环境及参数 / Working Environment

| 冷却方式 Cooling | | 自然冷却、风扇散热 Natural cooling, air cooling |
|-----------------------------|-------------------|---|
| 使用环境 Working Environment | 场合 Environment | 不能放在其他发热的设备旁, 要避免粉尘、油雾、腐蚀性气体, 湿度太大及强振动场所, 禁止有可燃气体和导电灰尘 Do not work to other heating equipment. Avoid dust, oil mist, corrosive gases, places with excessive humidity and strong vibrations. No combustible gases are allowed. body and conductive dust |
| | 温度 Temperature | 0-50°C |
| | 湿度 Humidity | 40-90%RH |
| | 振动 Vibration | 10~55Hz/0.15mm |
| 保存温度 Storage Temperature | | -20°C ~65°C |

控制信号接口 / Control Signal Interface

| 名称 Item | 功能 Function |
|------------|---|
| PU+ | 脉冲控制信号: +5V-+24V 均可驱动, 上升沿有效, 每当脉冲由低变高时, 电机走一微步。为了可靠响应脉冲信号, 脉冲宽度应大于 2.5μs。 Pulse control signal: +5V-+24V can be driven, the rising edge is valid, every time the pulse changes from low to high, the motor takes a micro step. In order to respond reliably to pulse signals, the pulse width should be greater than 2.5μs. |
| PU- | |
| DR+ | 方向控制信号: +5V-+24V 均可驱动, 高 / 低电平信号。为保证电机可靠换向, 方向信号应先于脉冲信号至少 50μs 建立。 Direction control signal: +5V-+24V can be driven, high/low level signal. In order to ensure reliable commutation of the motor, the direction signal should first It takes at least 50μs for the pulse signal to establish. |
| DR- | |
| EN+ | 使能控制信号: +5V-+24V 均可驱动, 高 / 低电平信号。用于使能或禁止电机的运行。当 EN+ 接 +5V, EN- 接低电平时, 驱动器将切断电机各相的电流使电机处于自由状态, 此时步进脉冲不被响应。当不需用此功能时, 使能信号端悬空即可。 Enable control signal: +5V-+24V can be driven, high/low level signal. Used to enable or disable the operation of the motor. When EN+ When connected to +5V and EN- to low level, the driver will cut off the current of each phase of the motor to make the motor in a free state. At this time, the step pulse Not responded to. When this function is not needed, the enable signal terminal can be left floating. |
| EN- | |

输出信号接口 /Output signal interface

输出信号接口默认作为报警输出功能使用，当发生过压、欠压、缺相、位置超差报警时，输出信号有效。

It's used for alarm output. When overvoltage, undervoltage, phase loss, or position out-of-tolerance alarm occurs, the output signal is valid.

| 名称 Item | 功能 Function |
|------------|---|
| AM+ | 报警信号输出: 过压、欠压、缺相报警发生时, 报警信号输出有效; Alarm signal output: When overvoltage, undervoltage, or phase loss alarm occurs, the alarm signal output is valid; |
| AM- | 常开或常闭接法见 3.4 小节内描述; The normally open or normally closed connection method is described in Section 3.4; 最大驱动电流 50mA。 Maximum drive current 50mA。 |

电源输入接口 /Power input interface

| 名称 Item | | 说明 Description | 功能 Function |
|------------|-----|-------------------------|---|
| VDC | DC+ | 电源接口 Power connector | 电源输入 DC12V~40V Power input DC12V-40V |
| | GND | | |

状态指示 /Status Indication

UMIP42 一体式脉冲型开环步进驱动器的指示灯为内缩式贴片绿色 LED，其基本定义如下表所示。

UMIP42 indicator light is a retracted SMD green LED, and its basic definition is as shown in the table below.

| 名称 Item | 功能 Function | 说明 Description |
|---------------------|--|--|
| 绿色 LED Green LED | 电源、报警指示灯、保存参数功能指示、恢复出厂设置功能指示、拨码状态切换指示; Power supply, alarm indicator light, save parameter function Can indicate, restore factory settings function instructions, Dial status switching indication; | 通电正常时灯常亮, 报警、保存参数、恢复出厂设置、拨码状态发生切换时闪烁, 其闪烁规律查看第六章; When the power is normal, the light is always on, alarm and save parameters, restore factory settings, dialing status Flashes when switching occurs. Check the flashing pattern. See Chapter 6; |

输入控制信号接口电路 /Input control signal interface circuit

UMIP42 驱动器控制信号端采用差分式接口电路，可适用差分信号、单端共阴及共阳等接口，内置高速光电耦合器，在环境恶劣的场合，抗干扰能力强。接口电路示意图如图 3.2 所示。

The UMIP42 driver control signal end adopts a differential interface circuit, which can be used for differential signals, single-ended common cathode and common anode interfaces. It has a built-in high-speed photocoupler, which can be used in harsh environments.

Strong anti-interference ability. The schematic diagram of the interface circuit is shown in Figure 3.2.

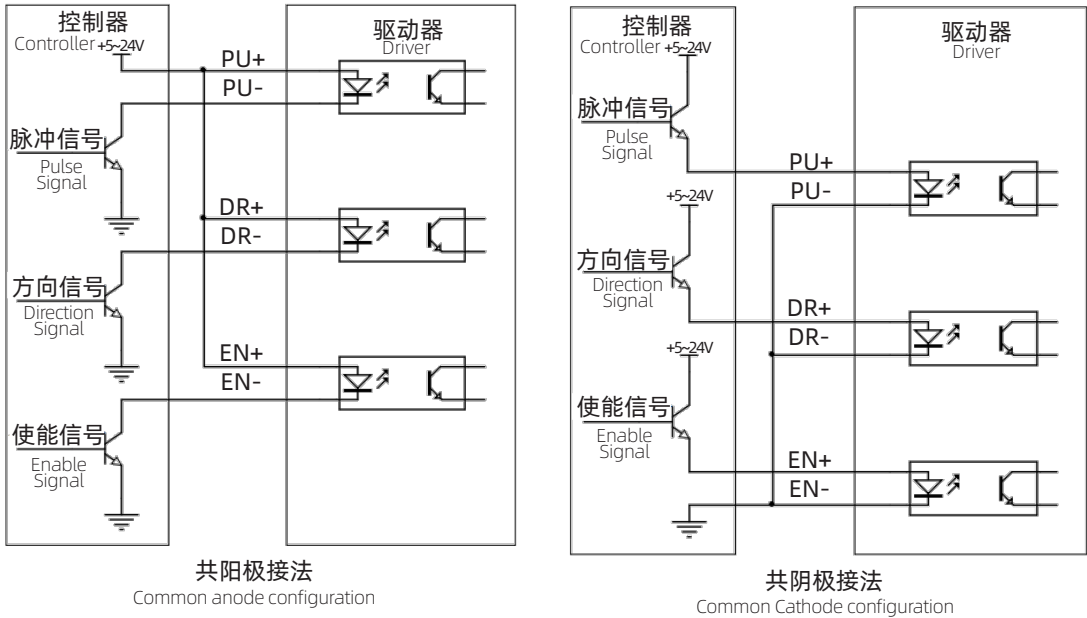
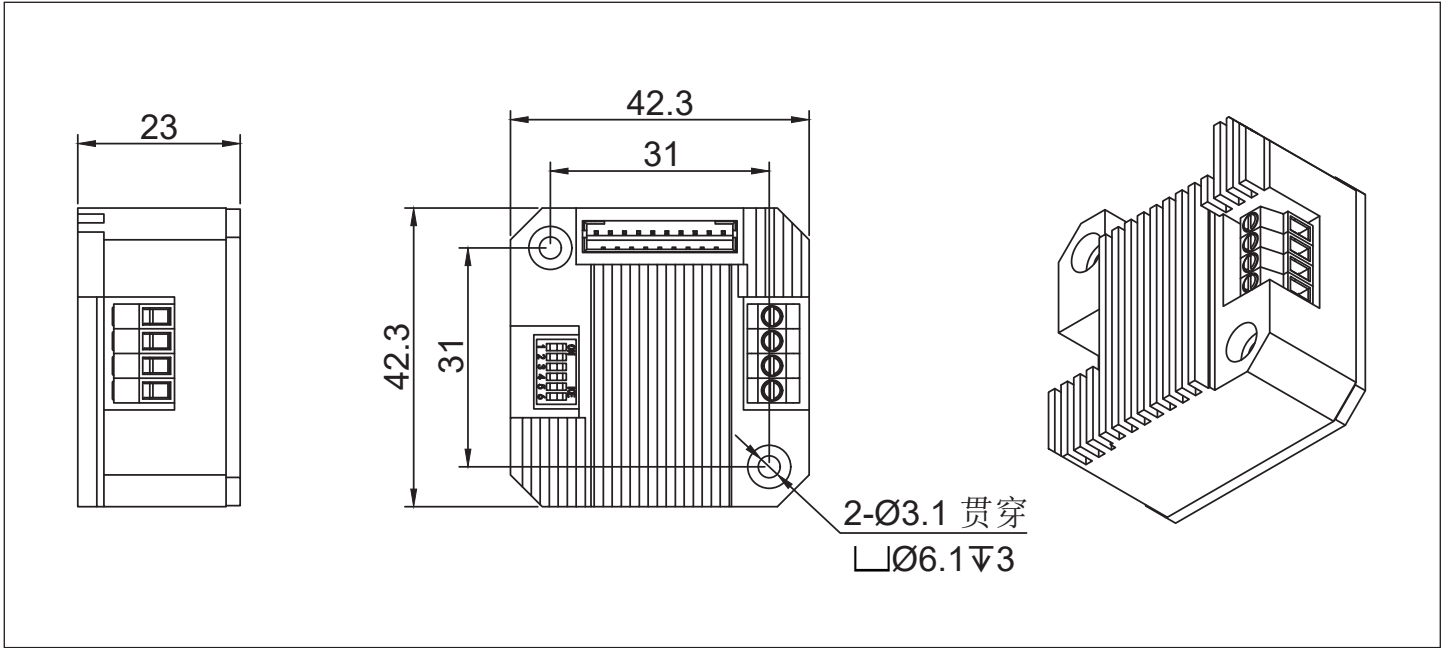


图 3.2 输入接口电路
Figure 3.2 Input interface circuit

○ 注意：UMIP42 为 5V-24V 通用驱动器，因此信号控制端不串电阻。
Note: UMIP42 is a 5V-24V universal driver, so there is no resistor in the signal control terminal.

尺寸图 /Dimensions



42 高精密方形行星减速一体式步进电机 (脉冲型)

42 Square Flange Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 15 arcmin)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 42HSC1409 | 2.93 | 1.33 | 2.2 | 3.5 | 270 | 4 | 30 | 0.22 | 34 | ≤ 1: 100 |
| 42HSC4409 | 2.5 | 1.5 | 1.65 | 3.3 | 380 | 4 | 40 | 0.3 | 40 | ≤ 1: 100 |

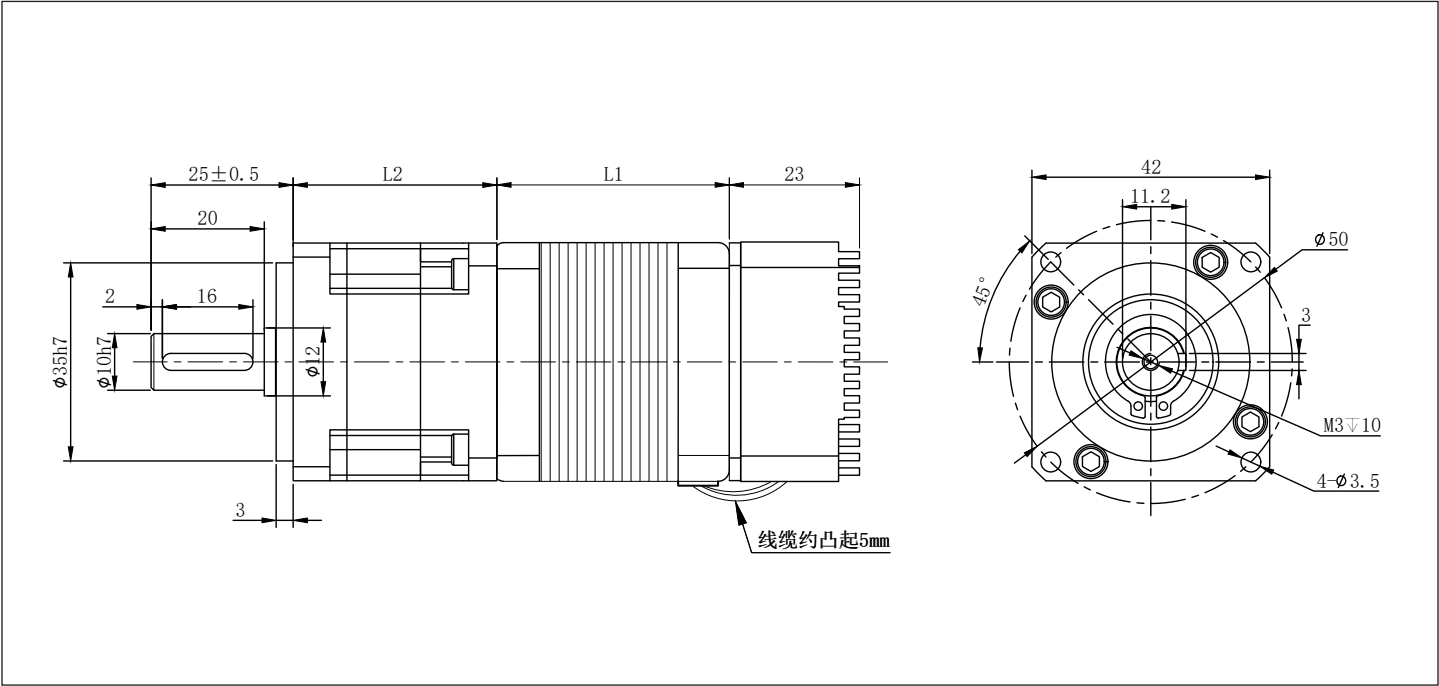
减速电机性能参数 (42HSC1409) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 |
|--------------------------------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 1036 | 1296 | 1814 | 2592 | 4060 | 5076 | 6345 | 7106 | 8883 | 10000 | 10000 | 10000 | 10000 |
| 减速电机总高度 Total Length(L1+L2+23) | 92 | | | | 103 | | | | | | | | |
| 减速电机总重量 Total Weight(g) | 507 | | | | 607 | | | | | | | | |
| 减速级数 Reduction Stage | 1 | | | | 2 | | | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 35.0 | | | | 46.0 | | | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤15' | | | | ≤20' | | | | | | | | |
| 效率 Efficiency | 96% | | | | 94% | | | | | | | | |

减速电机性能参数 (42HSC4409) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 |
|--------------------------------------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 1459 | 1824 | 2553 | 3648 | 5715 | 7144 | 8930 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 |
| 减速电机总高度 Total Length(L1+L2+23) | 98 | | | | 109 | | | | | | | | |
| 减速电机总重量 Total Weight(g) | 587 | | | | 687 | | | | | | | | |
| 减速级数 Reduction Stage | 1 | | | | 2 | | | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 35.0 | | | | 46.0 | | | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤15' | | | | ≤20' | | | | | | | | |
| 效率 Efficiency | 96% | | | | 94% | | | | | | | | |

尺寸图 /Dimensions



42 高精密圆形行星减速一体式步进电机 (脉冲型)

42 Round Flange Planetary Geared Stepper Motor with Integrated Driver(Pulse Control)
(Backlash≤ 15 arcmin)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g·cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 42HSC1409 | 2.93 | 1.33 | 2.2 | 3.5 | 270 | 4 | 30 | 0.22 | 34 | ≤ 1: 100 |
| 42HSC4409 | 2.5 | 1.5 | 1.65 | 3.3 | 380 | 4 | 40 | 0.3 | 40 | ≤ 1: 100 |

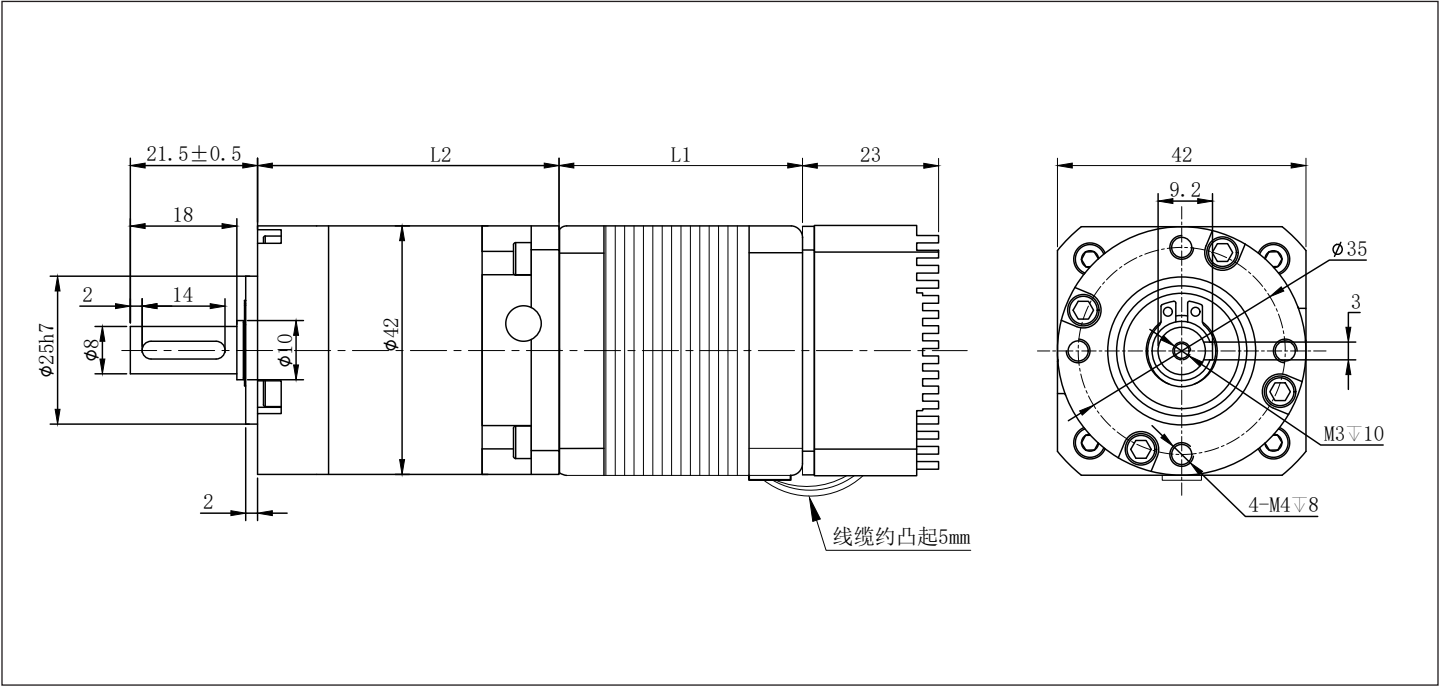
减速电机性能参数 (42HSC1409) /Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3 | 4 | 5 | 7 | 10 | 12 | 15 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 777 | 1036 | 1296 | 1814 | 2592 | 3045 | 3807 | 4060 | 5076 | 6345 | 7106 | 8883 | 10000 | 10000 | 10000 | 10000 |
| 减速电机总高度 Total Length(L1+L2+23) | 97 | | | | | 108 | | | | | | | | | | |
| 减速电机总重量 Total Weight(g) | 507 | | | | | 607 | | | | | | | | | | |
| 减速级数 Reduction Stage | 1 | | | | | 2 | | | | | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 40.0 | | | | | 51.0 | | | | | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤15' | | | | | ≤20' | | | | | | | | | | |
| 效率 Efficiency | 96% | | | | | 94% | | | | | | | | | | |

减速电机性能参数 (42HSC4409) /Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3 | 4 | 5 | 7 | 10 | 12 | 15 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 1094 | 1459 | 1824 | 2553 | 3648 | 4286 | 5358 | 5715 | 7144 | 8930 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 |
| 减速电机总高度 Total Length(L1+L2+23) | 103 | | | | | 114 | | | | | | | | | | |
| 减速电机总重量 Total Weight(g) | 587 | | | | | 687 | | | | | | | | | | |
| 减速级数 Reduction Stage | 1 | | | | | 2 | | | | | | | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 40.0 | | | | | 51.0 | | | | | | | | | | |
| 背隙 (无负载时) Backlash At No-load | ≤15' | | | | | ≤20' | | | | | | | | | | |
| 效率 Efficiency | 96% | | | | | 94% | | | | | | | | | | |

尺寸图 /Dimensions



42 精密行星减速一体式步进电机（脉冲型）

42 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 30 arcmin)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g·cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 42HSC1409 | 2.93 | 1.33 | 2.2 | 3.5 | 270 | 4 | 30 | 0.22 | 34 | ≤ 1: 100 |
| 42HSC4409 | 2.5 | 1.5 | 1.65 | 3.3 | 380 | 4 | 40 | 0.3 | 40 | ≤ 1: 100 |
| 42HSC6413 | 3 | 1.5 | 2 | 3.5 | 520 | 4 | 68 | 0.4 | 48 | ≤ 1: 100 |

减速电机性能参数 (42HSC1409) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 10 | 20 | 25 | 50 | 100 |
|--------------------------------------|-----|------|------|------|------|-------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 972 | 1215 | 2430 | 4320 | 5400 | 10000 | 5000 |
| 减速电机总高度 Total Length(L1+L2+23)mm | | 97 | | | | 108 | |
| 减速电机总重量 Total Weight(g) | | 507 | | | | 607 | |
| 减速级数 Reduction Stage | | 1 | | | | 2 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 40.0 | | | | 51.0 | |
| 背隙 (无负载时) Backlash At No-load | | ≤30' | | | | ≤45' | |
| 效率 Efficiency | | 90% | | | | 80% | |

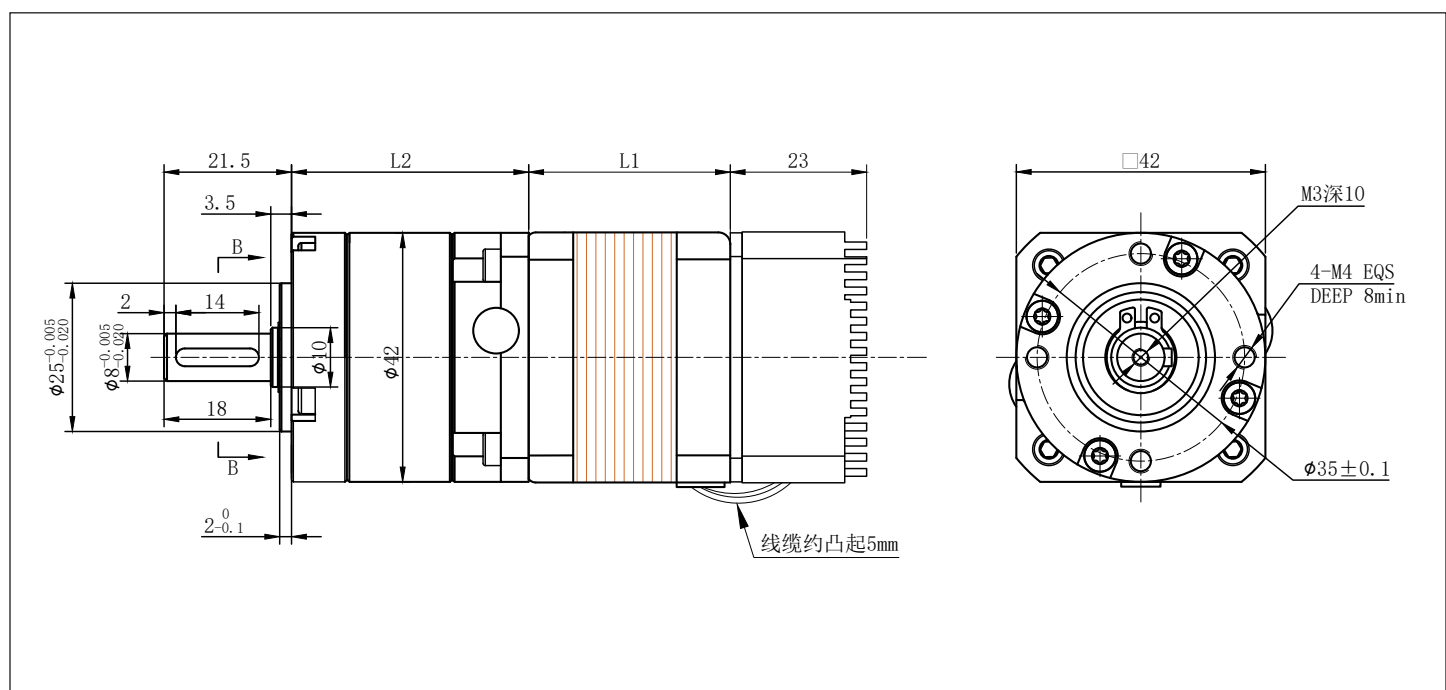
减速电机性能参数 (42HSC4409) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 10 | 20 | 25 | 50 | 100 |
|--------------------------------------|------|------|------|------|------|-------|------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 1368 | 1710 | 3420 | 6080 | 7600 | 10000 | 5000 |
| 减速电机总高度 Total Length(L1+L2+23)mm | | 103 | | | | 114 | |
| 减速电机总重量 Total Weight(g) | | 587 | | | | 687 | |
| 减速级数 Reduction Stage | | 1 | | | | 2 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 40.0 | | | | 51.0 | |
| 背隙 (无负载时) Backlash At No-load | | ≤30' | | | | ≤45' | |
| 效率 Efficiency | | 90% | | | | 80% | |

减速电机性能参数 (42HSC6413) / Geared Stepper Motor Specifications

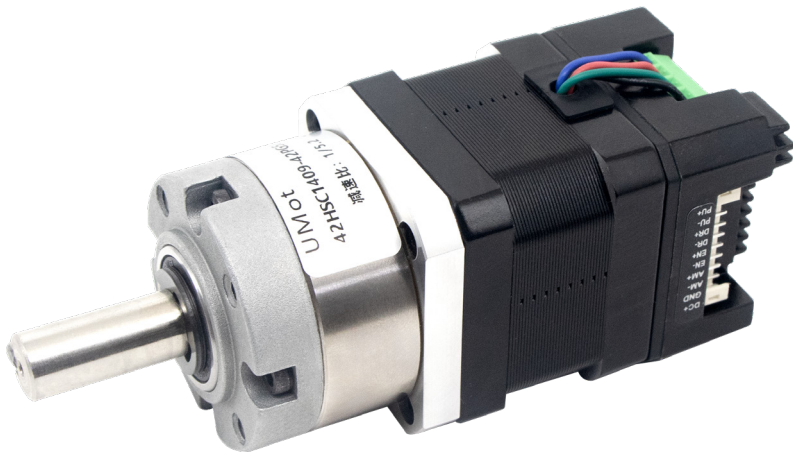
| | | | | | | | |
|--------------------------------------|------|------|------|------|-------|-------|------|
| 减速比 Reduction Ratio | 4 | 5 | 10 | 20 | 25 | 50 | 100 |
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 1872 | 2340 | 4680 | 8320 | 10000 | 10000 | 5000 |
| 减速电机总高度 Total Length(L1+L2+23)mm | | 111 | | | 122 | | |
| 减速电机总重量 Total Weight(g) | | 687 | | | 787 | | |
| 减速级数 Reduction Stage | | 1 | | | 2 | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 40.0 | | | 51.0 | | |
| 背隙 (无负载时) Backlash At No-load | | ≤30' | | | ≤45' | | |
| 效率 Efficiency | | 90% | | | 80% | | |

尺寸图 / Dimensions



42 传动行星减速一体式步进电机（脉冲型）

42 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 1.8°)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 42HSC1409 | 2.93 | 1.33 | 2.2 | 3.5 | 270 | 4 | 30 | 0.22 | 34 | ≤ 1: 369 |
| 42HSC4409 | 2.5 | 1.5 | 1.65 | 3.3 | 380 | 4 | 40 | 0.3 | 40 | ≤ 1: 369 |

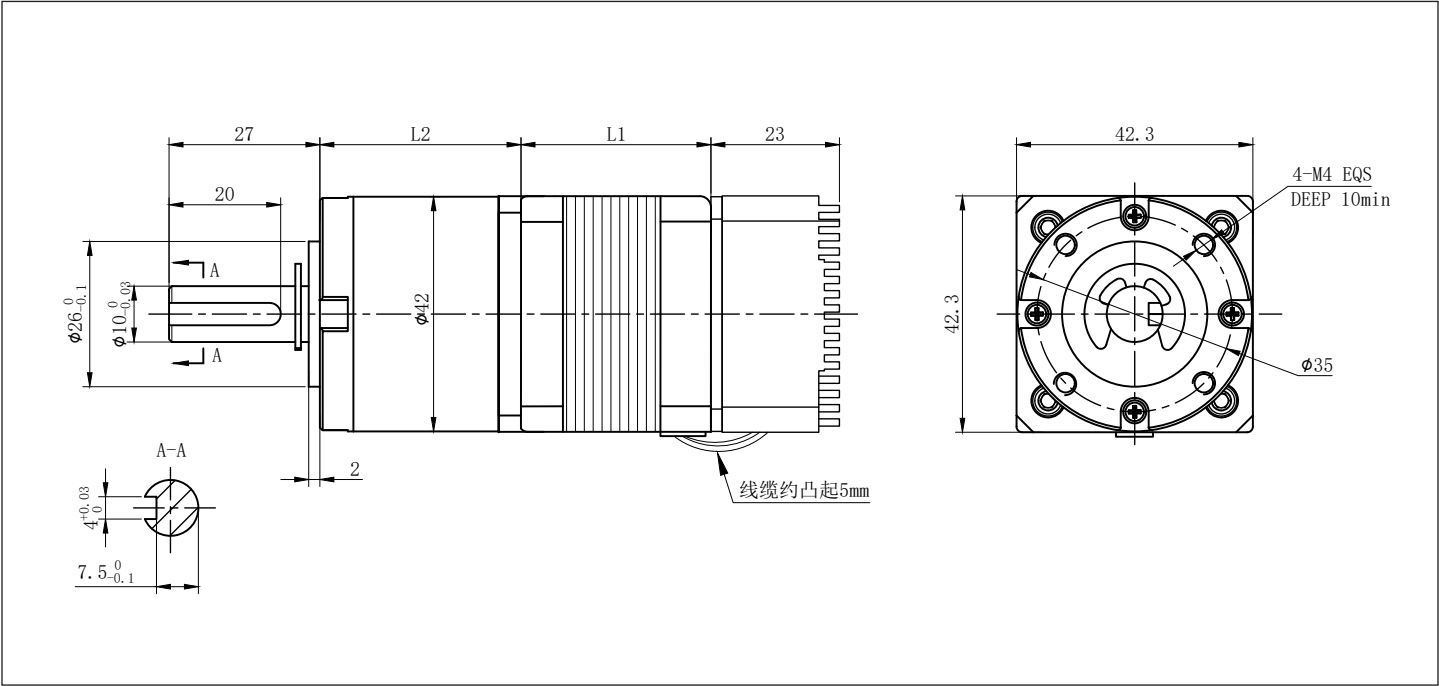
减速电机性能参数 (42HSC1409) /Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 | 189 | 264 | 369 |
|--------------------------------------|------|------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 902 | 1259 | 3062 | 4155 | 5000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 |
| 减速电机总高度 Total Length(L1+L2+23)mm | 88.5 | | | 99.1 | | | | 109.5 | | | 119.9 | |
| 减速电机总重量 Total Weight(g) | 467 | | | 547 | | | | 627 | | | 693 | |
| 减速级数 Reduction Stage | 1 | | | 2 | | | | 3 | | | 4 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 31.5 | | | 42.1 | | | | 52.5 | | | 62.9 | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | | ≤1.2° | | | | ≤1.5° | | | ≤1.8° | |
| 效率 Efficiency | 90% | | | 81% | | | | 73% | | | 66% | |

减速电机性能参数 (42HSC4409) /Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3.7 | 5.2 | 14 | 19 | 27 | 51 | 71 | 100 | 139 | 189 | 264 | 369 |
|--------------------------------------|------|------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 1269 | 1772 | 4309 | 5000 | 5000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 |
| 减速电机总高度 Total Length(L1+L2+23)mm | 94.5 | | | 105.1 | | | | 115.5 | | | 125.9 | |
| 减速电机总重量 Total Weight(g) | 547 | | | 627 | | | | 707 | | | 797 | |
| 减速级数 Reduction Stage | 1 | | | 2 | | | | 3 | | | 4 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 31.5 | | | 42.1 | | | | 52.5 | | | 62.9 | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | | ≤1.2° | | | | ≤1.5° | | | ≤1.8° | |
| 效率 Efficiency | 90% | | | 81% | | | | 73% | | | 66% | |

尺寸图 /Dimensions



57 一体式步进驱动器（脉冲型）

57 Integrated Stepper Motor Driver (Pulse Control)

UMIP57

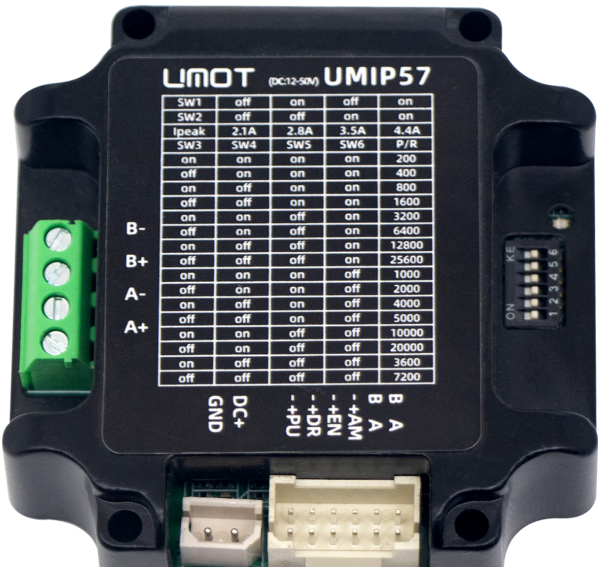
产品概述 /Product Description

UMIP57 一体式脉冲型开环步进驱动器是重庆优摩特科技有限公司最新推出的一款新型电机驱动一体化电机驱动器，采用最新专用电机控制数字信号处理器，提升电机的综合性能、降低电机的发热程度和减小电机的振动，采用电机和驱动器一体式设计，安装更加紧凑，减少外界干扰。

UMIP57 integrated pulse stepper motor driver is new designed for open-loop stepper motor by UMot. It adopts the latest dedicated motor control.It uses a digital signal processor to improve the performance of the motor, reduce the heat and vibration of the motor. It adopts an integrated design of the motor and driver to install more compact.

产品特点 /Feature

- 电机和驱动一体化，节省接线人工
No need to wire stepper motor with driver
- 体积小，便于安装
Small size,easy install
- 新一代 32 位 DSP 技术，平稳性佳、兼容性强、性价比高
New generation of 32-bit DSP technology, with good stability, strong compatibility and high cost performance
- 外置拨码设置驱动器电流、细分
External dial code sets driver current, subdivision
- 光隔离差分信号输入
Optically isolated differential signal input
- 内置微细分，低速平稳性极佳
Micro segmentation setting inside,stable work at low speed
- 脉冲响应频率最高可达 200KHz
Impulse response frequency max to 200KHz
- 细分设定范围 200-60000
Subdivision setting range 200-60000
- 精密电流控制使电机发热大幅降低
Precision current control significantly reduces motor heating
- 低振动低噪声
Low vibration and low noise
- 具有过压、欠压、缺相等报警保护功能
Overvoltage, undervoltage, phase loss protection
- 输入电压范围：DC12V~50V
Input voltage range:DC12V-50V



应用领域 /Application

适合各种中小型自动化设备和仪器，例如：医疗设备、检测设备、打标机、绘图仪等。满足客户低噪声、低发热、布线方便，抗干扰性更强等要求。

Suitable for various small and medium-sized automation equipment and instruments, such as: medical equipment, testing equipment, marking machines, plotters, etc. Satisfy customers with low noise, low heat, convenient wiring and anti-interference performance stronger requirements.

电气指标 /Specifications

| 说明 Description | UMIP42 | | | |
|----------------------------------|----------------|-----------------|------------|------------|
| | 最小值 Minimum | 典型值 Normally | 最大值 Max | 单位 unit |
| 输入电源电压 Input Voltage | 12 | 24 | 50 | VDC |
| 控制信号输入电流 Input signal current | 7 | 10 | 16 | mA |
| 步进脉冲频率 Frequency | 0 | | 200 | KHz |
| 绝缘电阻 Insulation resistance | 50 | | | MΩ |

使用环境及参数 / Working Environment

| 冷却方式 Cooling | | 自然冷却、风扇散热 Natural cooling, air cooling |
|-----------------------------|-------------------|---|
| 使用环境 Working Environment | 场合 Environment | 不能放在其他发热的设备旁, 要避免粉尘、油雾、腐蚀性气体, 湿度太大及强振动场所, 禁止有可燃气体和导电灰尘 Do not work to other heating equipment. Avoid dust, oil mist, corrosive gases, places with excessive humidity and strong vibrations. No combustible gases are allowed. body and conductive dust |
| | 温度 Temperature | 0-50°C |
| | 湿度 Humidity | 40-90%RH |
| | 振动 Vibration | 10~55Hz/0.15mm |
| 保存温度 Storage Temperature | | -20°C ~65°C |

接口描述 / Application

UMIP57 一体式脉冲型开环步进驱动器的电源接口采用 XH2.54-2P 针座, 信号控制接口采用 PHB2.0-6P 针座, 电机接口采用 3.5-4P 针座, 出厂时已正确接线。接口具体定义看以下几个小节介绍。

The UMIP57 power interface integrated pulse open-loop stepper driver adopts XH2.54-2P pin holder, the signal control interface adopts PHB2.0-6P pin holder, and the motor interface adopts 3.5-4P pin holder. The wiring is correct before leaving the factory. For the specific definition of the interface, see the introduction in the following sections.

控制信号接口 / Control Signal Interface

| 名称 Item | 功能 Function |
|------------|--|
| PU+ | 脉冲控制信号: +5V-+24V 均可驱动, 上升沿有效, 每当脉冲由低变高时, 电机走一微步。为了可靠响应脉冲信号, 脉冲宽度应大于 2.5μs。 Pulse control signal: +5V-+24V can be driven, the rising edge is valid, every time the pulse changes from low to high, the motor takes a micro step. In order to respond reliably to pulse signals, the pulse width should be greater than 2.5μs. |
| PU- | |
| DR+ | 方向控制信号: +5V-+24V 均可驱动, 高 / 低电平信号。为保证电机可靠换向, 方向信号应先于脉冲信号至少 50μs 建立。 Direction control signal: +5V-+24V can be driven, high/low level signal. In order to ensure reliable commutation of the motor, the direction signal should first It takes at least 50μs for the pulse signal to establish. |
| DR- | |
| EN+ | 使能控制信号: +5V-+24V 均可驱动, 高 / 低电平信号。用于使能或禁止电机的运行。当 EN+ 接 +5V, EN- 接低电平时, 驱动器将切断电机各相的电流使电机处于自由状态, 此时步进脉冲不被响应。当不需此功能时, 使能信号端悬空即可。 Enable control signal: +5V-+24V can be driven, high/low level signal. Used to enable or disable the operation of the motor. When EN+ When connected to +5V and EN- to low level, the driver will cut off the current of each phase of the motor to make the motor in a free state. At this time, the step pulse Not responded to. When this function is not needed, the enable signal terminal can be left floating. |
| EN- | |

输出信号接口 /Output signal interface

输出信号接口默认作为报警输出功能使用，当发生过压、欠压、缺相、位置超差报警时，输出信号有效。此外，用户可根据实际使用情况做相应设置。

It's used for alarm output. When overvoltage, undervoltage, phase loss, or position out-of-tolerance alarm occurs, the output signal is valid. In addition, users can make corresponding settings according to actual usage conditions.

| 名称 Item | 功能 Function |
|------------|--|
| AM+ | 报警信号输出: 过压、欠压、缺相报警发生时, 报警信号输出有效; Alarm signal output: When overvoltage, undervoltage, or phase loss alarm occurs, the alarm signal output is valid; |
| AM- | 常开或常闭接法见 3.4 小节内描述; The normally open or normally closed connection method is described in Section 3.4; 最大驱动电流 50mA。 Maximum drive current 50mA。 |
| A B | 485 通讯接口 A、B 端, 预留端口, 此型号不支持 RS485, 不用接 485 communication interface A and B are reserved ports. This model does not support RS485, so there is no need to connect them. |

电源输入接口 /Power input interface

| 名称 Item | | 说明 Description | 功能 Function |
|------------|-----|-------------------------|---|
| VDC | DC+ | 电源接口 Power connector | 电源输入 DC12V~50V Power input DC12V-50V |
| | GND | | |

输入控制信号接口电路 /Input control signal interface circuit

UMIP57 驱动器控制信号端采用差分式接口电路，可适用差分信号、单端共阴及共阳等接口，内置高速光电耦合器，在环境恶劣的场合，抗干扰能力强。接口电路示意图如图 3.2 所示。

The UMIP57 driver control signal end adopts a differential interface circuit, which can be used for differential signals, single-ended common cathode and common anode interfaces. It has a built-in high-speed photocoupler, which can be used in harsh environments.

Strong anti-interference ability. The schematic diagram of the interface circuit is shown in Figure 3.2.

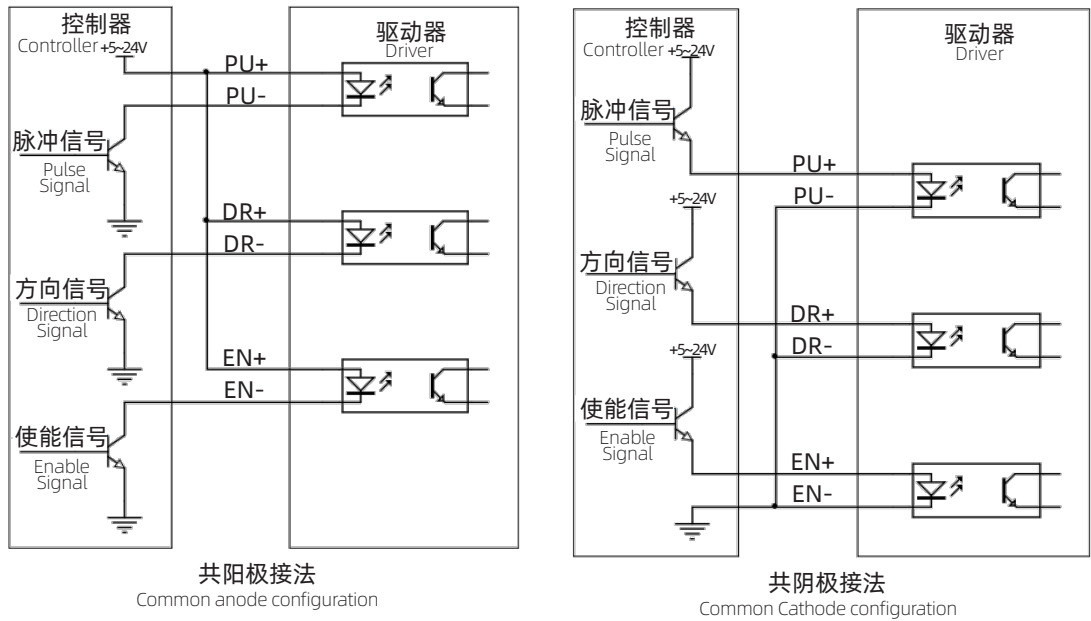
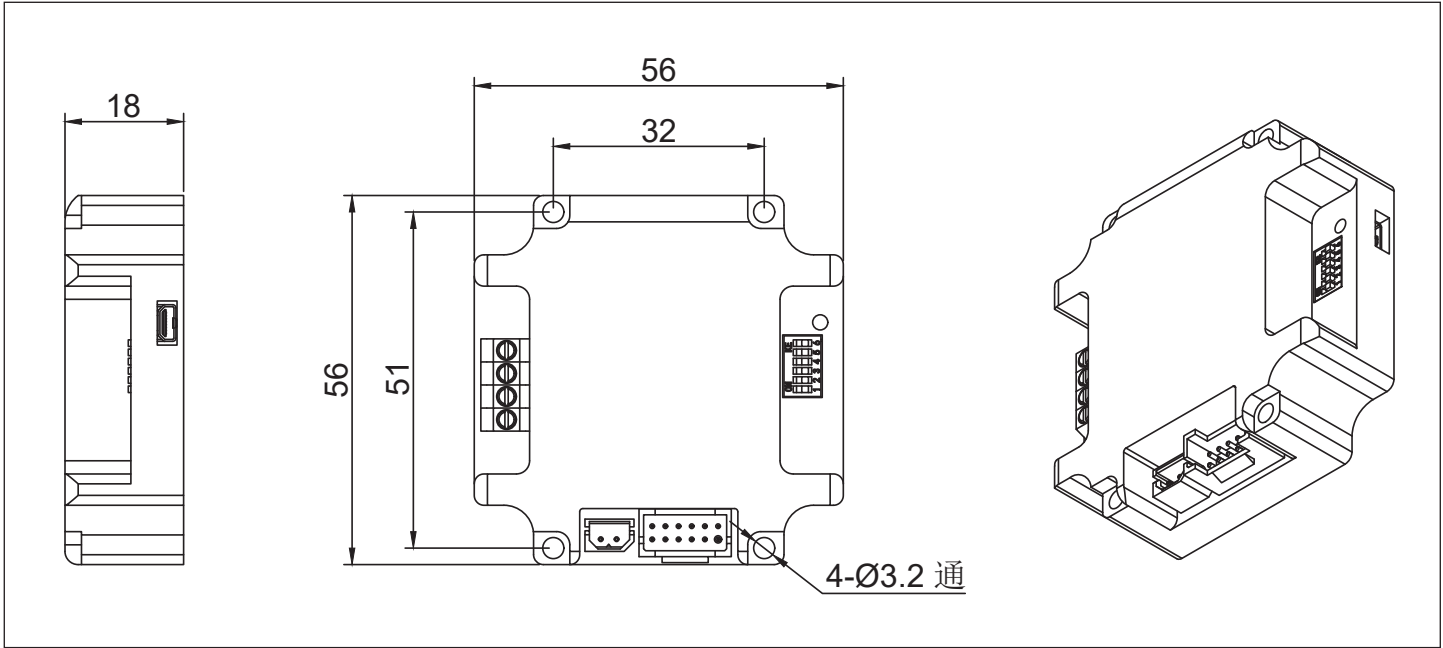


图 3.2 输入接口电路
Figure 3.2 Input interface circuit

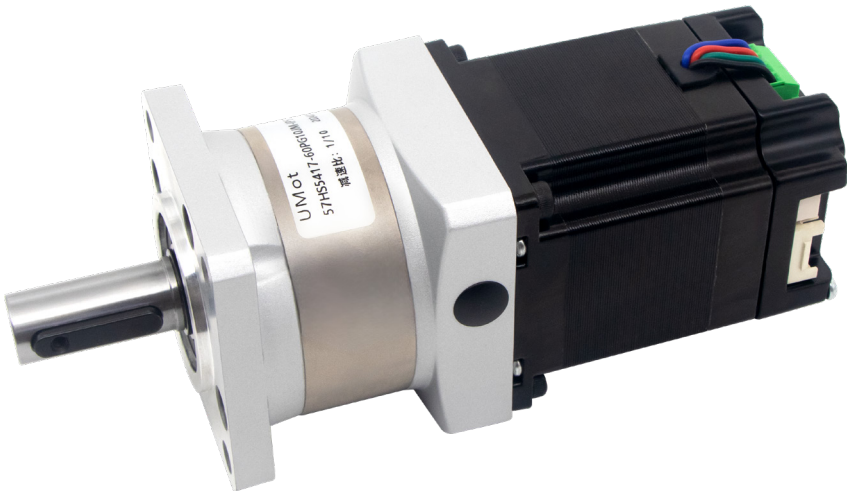
○ 注意：UMIP57 为 5V-24V 通用驱动器，因此信号控制端不串电阻。
Note: UMIP57 is a 5V-24V universal driver, so there is no resistor in the signal control terminal.

尺寸图 /Dimensions



57 高精密行星减速一体式步进电机（脉冲型）

57 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 15 arcmin)



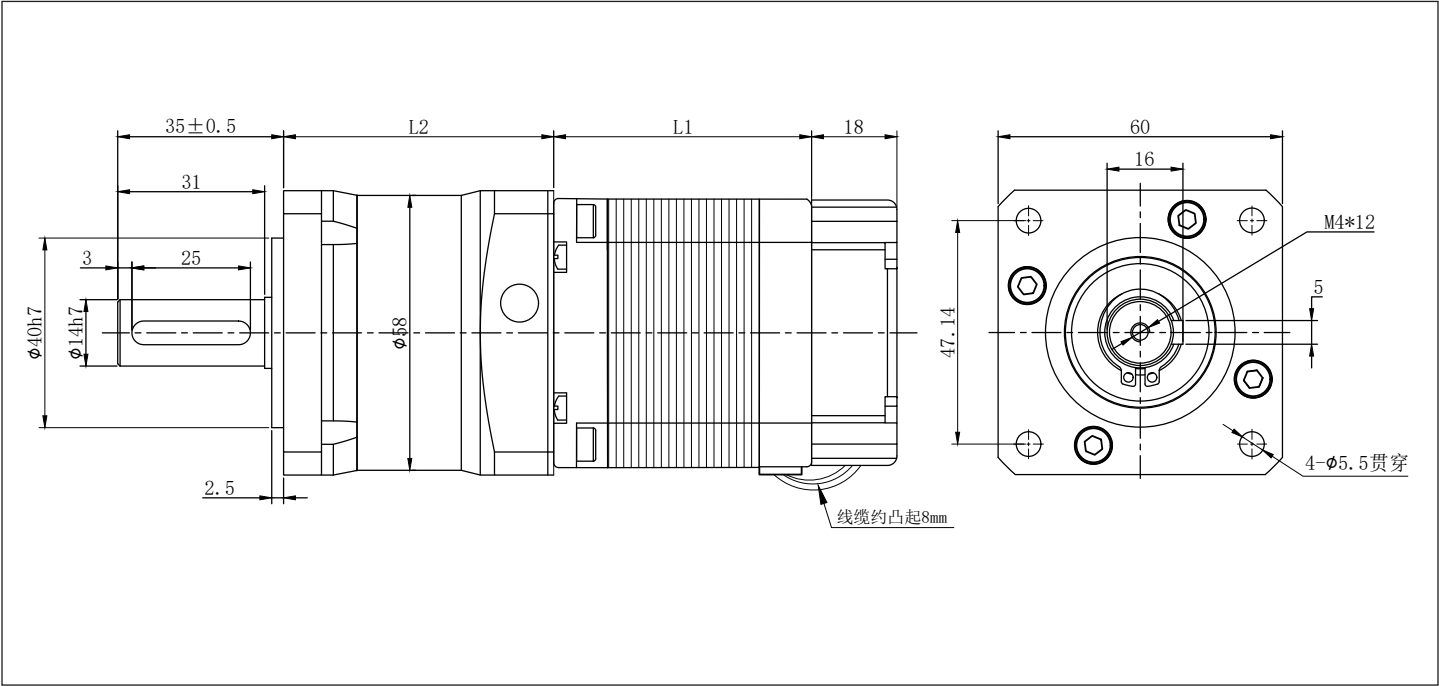
技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g-cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 57HS5417 | 1.7 | 2.0 | 0.85 | 2.5 | 950 | 4 | 200 | 0.64 | 55 | ≤ 1: 70 |

减速电机性能参数 (57HS5417) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 |
|--------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 3648 | 4560 | 6384 | 9120 | 14288 | 17860 | 22325 | 25004 | 30000 | 25000 | 25000 | 20000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | | 130 | | | | | | 146 | | | | |
| 减速电机总重量 Total Weight(g) | | 1410 | | | | | | 1640 | | | | |
| 减速级数 Reduction Stage | | 1 | | | | | | 2 | | | | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 57.0 | | | | | | 73.0 | | | | |
| 背隙 (无负载时) Backlash At No-load | | ≤15' | | | | | | ≤20' | | | | |
| 效率 Efficiency | | 96% | | | | | | 94% | | | | |

尺寸图 /Dimensions



57 精密行星减速一体式步进电机 (脉冲型)

57 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 30 arcmin)



技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g·cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|------------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 57HSC5417 | 1.7 | 2.0 | 0.85 | 2.5 | 950 | 4 | 200 | 0.64 | 55 | ≤ 1: 50 |
| 57HSC7407 | 2.64 | 4.0 | 0.66 | 2.3 | 2400 | 4 | 480 | 1.00 | 76 | ≤ 1: 50 |
| 57HSC11402 | 3.6 | 4.5 | 0.80 | 3.5 | 3600 | 4 | 680 | 1.70 | 113.5 | ≤ 1: 50 |

减速电机性能参数 (57HSC5417) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 10 | 20 | 25 | 50 |
|--------------------------------------|------|-------|------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 3420 | 4275 | 8550 | 15200 | 19000 | 20000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | | 128.5 | | | 141 | |
| 减速电机总重量 Total Weight(g) | | 1340 | | | 1490 | |
| 减速级数 Reduction Stage | | 1 | | | 2 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 55.5 | | | 68.0 | |
| 背隙 (无负载时) Backlash At No-load | | ≤30' | | | ≤45' | |
| 效率 Efficiency | | 90% | | | 80% | |

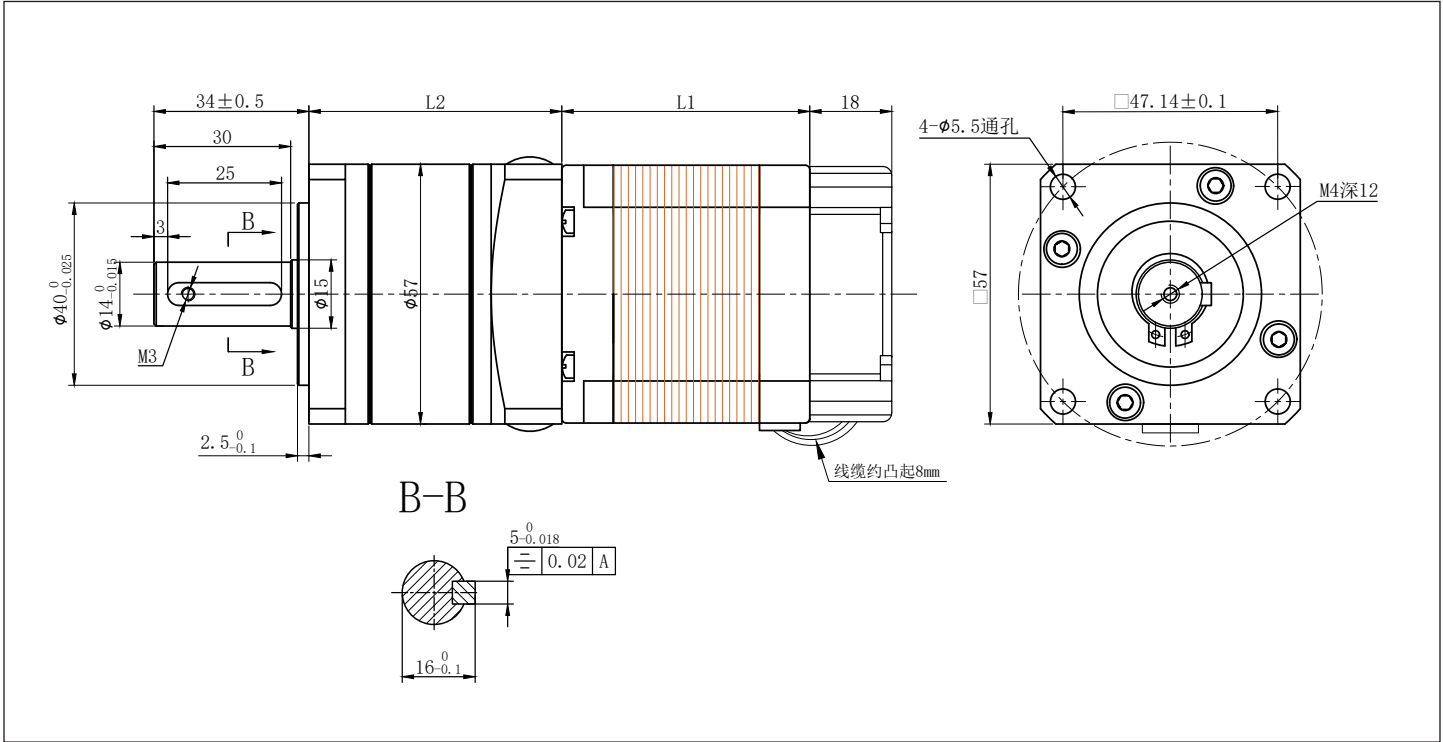
减速电机性能参数 (57HSC7407) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 4 | 5 | 10 | 20 | 25 | 50 |
|--------------------------------------|------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 8640 | 10800 | 10000 | 25000 | 25000 | 25000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | | 149.5 | | | 162 | |
| 减速电机总重量 Total Weight(g) | | 1700 | | | 1850 | |
| 减速级数 Reduction Stage | | 1 | | | 2 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 55.5 | | | 68.0 | |
| 背隙 (无负载时) Backlash At No-load | | ≤30' | | | ≤45' | |
| 效率 Efficiency | | 90% | | | 80% | |

减速电机性能参数 (57HSC11402) /Geared Stepper Motor Specifications

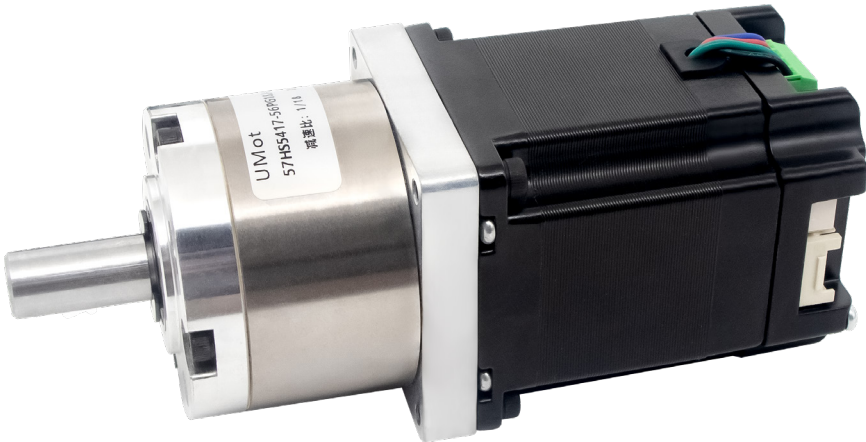
| 减速比 Reduction Ratio | 4 | 5 | 10 | 20 | 25 | 50 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 12960 | 16200 | 10000 | 25000 | 25000 | 25000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | | 187 | | | 199.5 | |
| 减速电机总重量 Total Weight(g) | | 2400 | | | 2550 | |
| 减速级数 Reduction Stage | | 1 | | | 2 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | | 55.5 | | | 68.0 | |
| 背隙 (无负载时) Backlash At No-load | | ≤30' | | | ≤45' | |
| 效率 Efficiency | | 90% | | | 80% | |

尺寸图 /Dimensions



57 传动行星减速一体式步进电机（脉冲型）

57 Planetary Geared Stepper Motor with Integrated Driver (Pulse Control)
(Backlash≤ 1.8°)



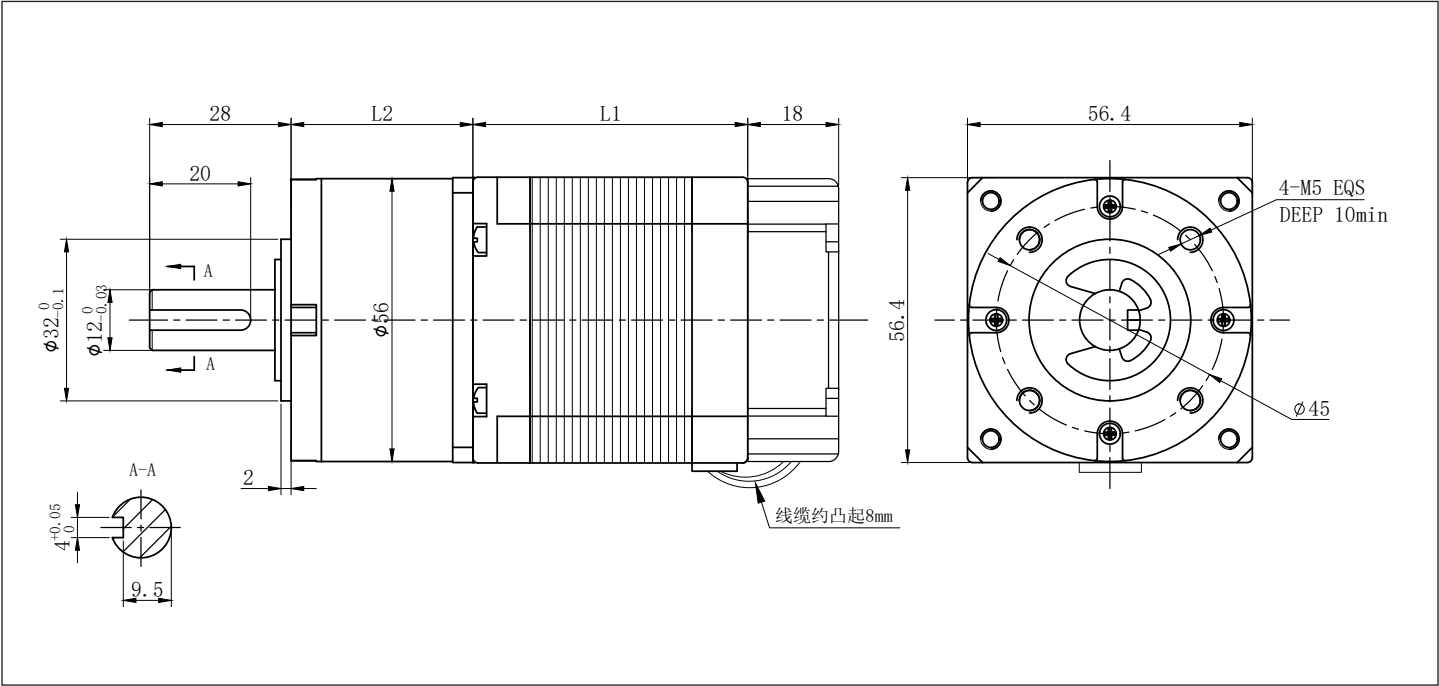
技术参数 / Technical Data

| Model No. | 额定电压 Rated Voltage (V) | 每相电流 Current /Phase (A) | 每相电阻 Resistance /Phase (Ω) | 每相电感 Inductance /Phase (mH) | 保持转矩 Holding Torque (mN.m) | 引出线数 #of Leads | 转动惯量 Rotor Inertia (g·cm ²) | 重量 Weight (kg) | 机身长度 (L1) Length(L1) (mm) | 适配减速比 Max. Gear Ratio |
|-----------|------------------------------|----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------|--|----------------------|---------------------------------|-----------------------------|
| 57HS5417 | 1.7 | 2.0 | 0.85 | 2.5 | 950 | 4 | 200 | 0.64 | 55 | ≤ 1: 187 |

减速电机性能参数 (57HS5417) / Geared Stepper Motor Specifications

| 减速比 Reduction Ratio | 3.6 | 4.3 | 13 | 15 | 18 | 23 | 47 | 55 | 65 | 77 | 96 | 121 | 153 | 187 |
|--------------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 减速电机输出扭矩 Torque For Gearbox(mN.m) | 3078 | 3634 | 10004 | 11543 | 13851 | 15000 | 30000 | 30000 | 30000 | 30000 | 30000 | 30000 | 30000 | 30000 |
| 减速电机总高度 Total Length(L1+L2+18)mm | 110.8 | | | 122.4 | | | | | 133.8 | | | | 144.9 | |
| 减速电机总重量 Total Weight(g) | 1150 | | | 1300 | | | | | 1450 | | | | 1610 | |
| 减速级数 Reduction Stage | 1 | | | 2 | | | | | 3 | | | | 4 | |
| 减速器长度 (L2) Gearbox Length(L2) mm | 37.8 | | | 49.4 | | | | | 60.8 | | | | 71.9 | |
| 背隙 (无负载时) Backlash At No-load | ≤1° | | | ≤1.2° | | | | | ≤1.5° | | | | ≤1.8° | |
| 效率 Efficiency | 90% | | | 81% | | | | | 73% | | | | 66% | |

尺寸图 /Dimensions



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