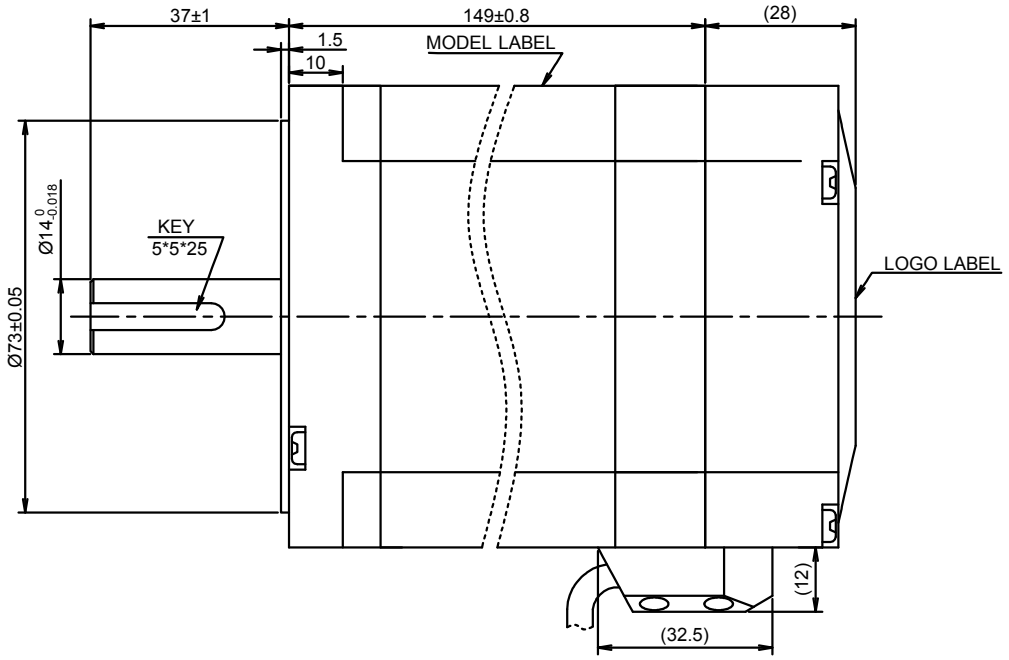
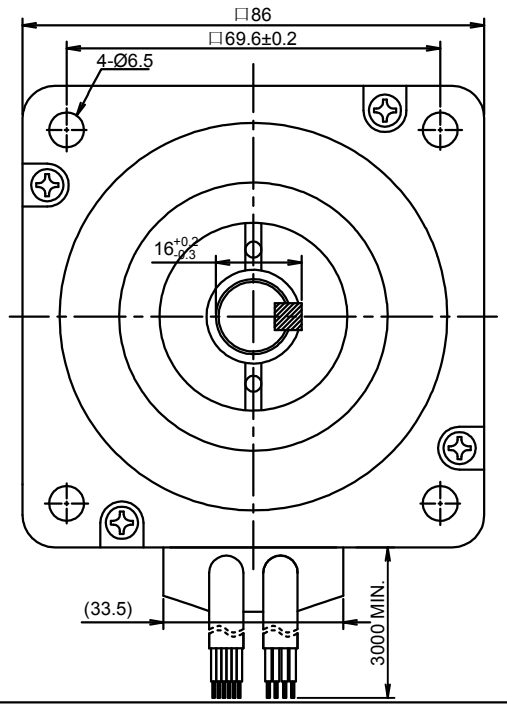
DIMENSIONS UNIT=mm

BLACK BRACKET




## ELECTRICAL PARAMETER

| | |
|---|---|
| NUMBER OF PHASE | 2 |
| BASIC STEP ANGLE | 1.8°±5% |
| RATED CURRENT(PHASE) | 6.4A |
| RESISTANCE(PHASE) @25℃ | 0.8Ω±0.15Ω |
| INDUCTANCE(PHASE) @1kHz 1Vrms | 7.3mH±20% |
| HOLDING TORQUE | 12.8Nm±15% [113.3lb-in] NOTE)1. |
| ROTOR INERTIA | APPROX 4000g.cm2 |
| WEIGHT | APPROX 5.6kg |
| DIELECTRIC STRENGTH | 500V A.C 1 MINUTE |
| INSULATION RESISTANCE | 100MΩ MIN. |
| INSULATION CLASS(UL) | B (130℃) [266°F] |
| TEMPERATURE RISE | 80K MAX. NOTE)2. |
| OPERATION AMBIENT TEMPERATURE | -20℃～+50℃ [-4°F～122°F] |
| OPERATION AMBIENT HUMIDITY | 15%RH～95%RH |

NOTE）:
1.AT RATED CURRENT,TWO PHASE ON.
2.MEASURED BY RESISTANCE METHOD.MOUNT WITH ALUMINUM HEAT SINK 258*258*T5
AT TWO WINDING BE EXCITED BY RATED VOLTAGE,0PPS,2PHASE ON.

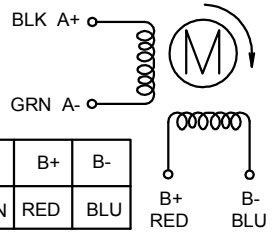
2 PHASE SEQUENCE(FULL STEP)
VIEW FROM MOUTING SIDE （CW/CCW）

| CW | STEP | A+ | B+ | A- | B- | CCW |
|---|---|---|---|---|---|---|
| | 1 | + | + | − | − | |
| | 2 | − | + | + | − | |
| | 3 | − | − | + | + | |
| | 4 | + | − | − | + | |
| | 5 | + | + | − | − | |
| | 6 | − | + | + | − | |

ENCODER SPECIFICATIONS

| | |
|---|---|
| INPUT VOLTAGE | DC 5V |
| OUTPUT WAVE | SQUARE WAVE |
| OUTPUT SIGNAL | CHA CHB |
| OUTPUT SIGNAL VOLTAGE | DC 5V |
| ENCODER RESOLUTION | 1000 CPR/PHASE |

MOTOR WIRING DIAGRAM




| MOTOR LEAD | A+ | A- | B+ | B- |
|---|---|---|---|---|
| LEAD COLOR | BLK | GRN | RED | BLU |

| ENCODER LEAD | VCC | GND | PA+ | PA- | PB+ | PB- |
|---|---|---|---|---|---|---|
| LEAD COLOR | RED | BLK | BLU | BLU BLK | GRN | GRN BLK |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | MODEL |
| | | | | | 86HBD5401-37K5Ø14EN |
| TOLERANCE | ±0.3/±3° | REV. | DATE | REVISIONS | BY |
| DRAWN | | SCALE | 1:1 | CLOSED LOOP STEPPER MOTOR SPECIFICATION | FIRST ANGLE PROJECTION |
| DESIGNED | | | | YEJMKJ | |
| CHECKED | | | | | SHEET 1/1 |

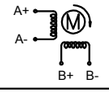
# Product characteristics

- ►Unique algorithm, low heat, large torque
- ►Voltage range: AC18~AC80V/DC18~DC110V
- ►16 sub-division, can be customized according to customer requirements
- ►Signal input 5~24V compatible, no external series resistance required
- ►Maximum response frequency 400KHZ
- ►The torque attenuation is small, the maximum speed can reach 3000rmp
- ►External alarm and in place output port, convenient monitoring and control
- ►Intelligent current regulation reduces power consumption at low loads and increases torque at high loads
- ►The effective current can be set through the dip switch to adapt to different motors
- ►Dip switch set single and double pulse, factory default pulse + direction control
- ►Dip switch set pulse delay, factory default 40ms
- ►Excellent high-speed performance and rigidity, perfect integration of servo and stepper advantages in one.

# Typical application

Mainly used in engraving machine, special industrial sewing machine, stripping machine, marking machine, cutting machine, laser phototypesetting, plotter, CNC machine tools, dispensing machine, screw machine and other automation equipment and instruments

## Indicator Light and Interface Description

| Marker Symbols | Function | Notes |
|---|---|---|
| PWR/FLT | Voltage and fault indicator light | Green light flashes: the driver is normal and no pulse signal is received; green light is always on: the pulse signal is received and the motor is rotating; one red and one green: overcurrent or phase short circuit fault; two red and one green: the motor is not detected or the motor wiring is wrong; three red and one green: overvoltage fault; four red and one green: undervoltage fault; five red and one green: tracking error out of tolerance fault. |
| PUL+ | Pulse input signal photoelectric isolation positive end | Pulse signal voltage 3.3~24V can be driven |
| PUL- | Pulse input signal photoelectric isolation negative end | The falling edge is effective, every time the pulse changes from high to low, the motor moves one step, and the pulse width is greater than 2.5 microseconds |
| DIR + | Direction input signal photoelectric isolation positive end | Direction signal voltage 3.3~24V can be driven |
| DIR- | Direction input signal photoelectric isolation negative end | Used to change the direction of the motor. The falling edge is effective. Every time the pulse changes from high to low, the motor moves one step. The pulse width is greater than 2.5 microseconds. |
| EN+ | Enable input signal photoelectric isolation positive end | Enable signal voltage 3.3~24V can be driven |
| EN- | Enable input signal photoelectric isolation negative end | When effective (low level), the motor coil current is turned off, the motor is in a free state and the alarm signal is cleared |
| EX+ | In-position signal output positive end | When the driver completes the given pulse, the arrival signal is valid (output light is turned on). EX+ is connected to 24V+, EX- is connected to the PLC input port, and the maximum drive current is 10mA |
| EX- | In-position signal output negative end | |
| ALM+ | Alarm signal output positive end | When the red light flashes, the alarm signal is valid (output light is on, normally open by default). ALM+ connects to 24V+, ALM- connects to PLC input port, maximum drive current 10mA |
| ALM- | Alarm signal output negative end | |
| VCC | Encoder power supply positive | Encoder 5V power supply positive terminal |
| EGND | Encoder power supply grourd | Encoder power supply ground |
| EB+ | Encoder B phase input positive end | Connect to encoder B channel positive input |
| EB- | Encoder B phase input negative end | Connect to encoder B channel negative input |
| EA+ | Encoder A phase input positive end | Connect to encoder A channel positive input |
| EA- | Encoder A phase input negative end | Connect to encoder A channel negative input |
| V- | Driver power supply negative end | Driver power supply negative |
| V+ | Driver power supply positive end | Voltage range: AC18~AC80V/DC18~DC110V |
| A+ | Motor wiring A+ |  |
| A- | Motor wiring A- | |
| B+ | Motor wiring B+ | |
| B- | Motor wiring B- | |



## Performance Indicators

### 1.Electrical Specifications

| illustrate | 704-0042-00(BH86) | | | |
|---|---|---|---|---|
| | Minimum | Typical Value | Maximum | unit |
| Output current (peak) | 2.2 | - | 6 | A |
| Supply voltage | 18 | 60 | 110 | VAC |
| | 18 | 60 | 160 | VDC |
| Control signal current | 5 | 10 | 20 | mA |
| Step pulse frequency | 0 | - | 300 | KHz |
| Step pulse width | 2 | - | - | us |
| Direction signal width | 100 | - | - | us |
| Undervoltage protection point | - | 7.5 | | VDC |
| Overvoltage protection point | - | 170 | - | VDC |
| Insulation resistance | 500 | | | MΩ |

### 2.Environmental indicators

| | | |
|---|---|---|
| Cooling method | | Natural cooling or forced air cooling |
| Usage Environment | occasion | Do not place it near other heating equipment. Avoid dust, oil, corrosive gas, high humidity and strong vibration. Do not |
| | temperature | 0—+50℃ |
| | humidity | 40—90%RH |
| | vibration | 10~55Hz/0.15mm |
| Storage temperature | | -20℃-65℃ |
| weight | | 470g |

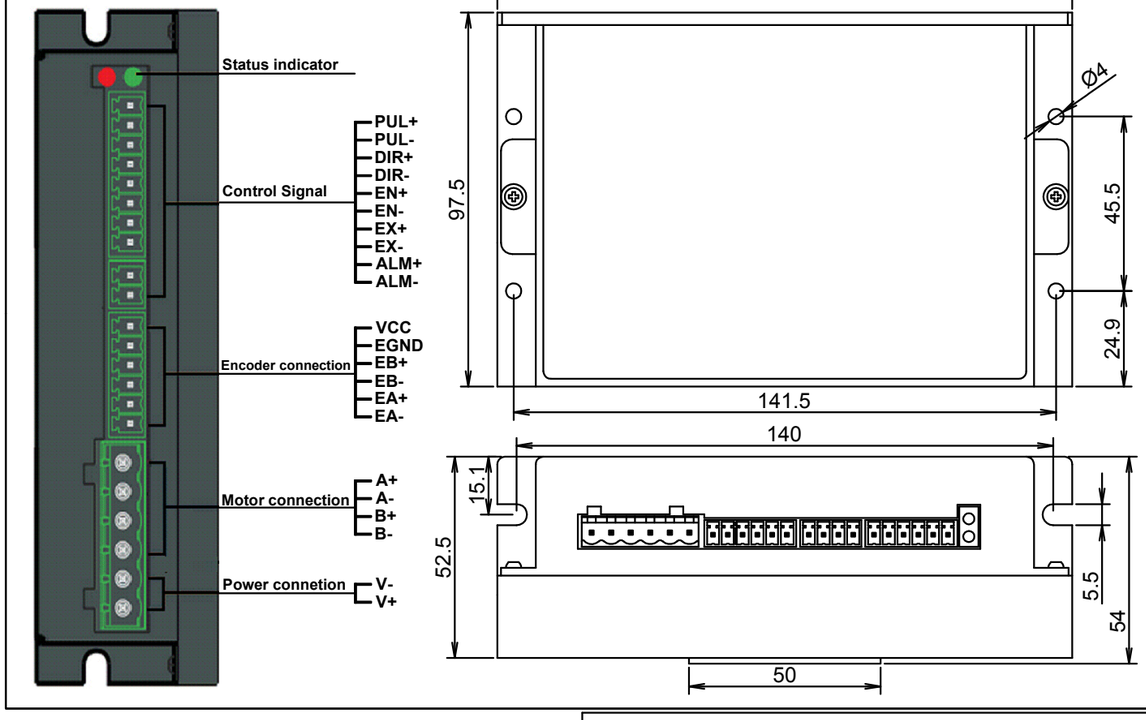
## Dial setting

| Number of subdivisions | 2 | 4 | 8 | 16 | 32 | 64 | 128 | 256 | 5 | 10 | 20 | 25 | 40 | 50 | 100 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pulse/rev | 400 | 800 | 1600 | 3200 | 6400 | 12800 | 25600 | 51200 | 1000 | 2000 | 4000 | 5000 | 8000 | 10000 | 20000 | 40000 |
| SW1 | ON | OFF | ON | OFF | ON | OFF | ON | OFF | ON | OFF | ON | OFF | ON | OFF | ON | OFF |
| SW2 | ON | ON | OFF | OFF | ON | ON | OFF | OFF | ON | ON | OFF | OFF | ON | ON | OFF | OFF |
| SW3 | ON | ON | ON | ON | OFF | OFF | OFF | OFF | ON | ON | ON | ON | OFF | OFF | OFF | OFF |
| SW4 | ON | ON | ON | ON | ON | ON | ON | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |

SW5:Motor rotation direction setting OFF = Clockwise ON=Counterclockwise
SW6:Single and double pulse setting OFF=Pulse+Direction ON=Double Pulse
SW7,SW8Pulse delay setting

| Pulse Delay(ms) | 0 | 4 | 20 | 40 |
|---|---|---|---|---|
| SW7 | ON | OFF | ON | OFF |
| SW8 | ON | ON | OFF | OFF |

## Product Diagram




**CLOSED LOOP STEPPER DRIVER**

| | |
|---|---|
| MODEL | BH86 |
| DWG NO. | 704-0042-00 |

YEJMKJ