GeMinG Linear Drive

# HTW76

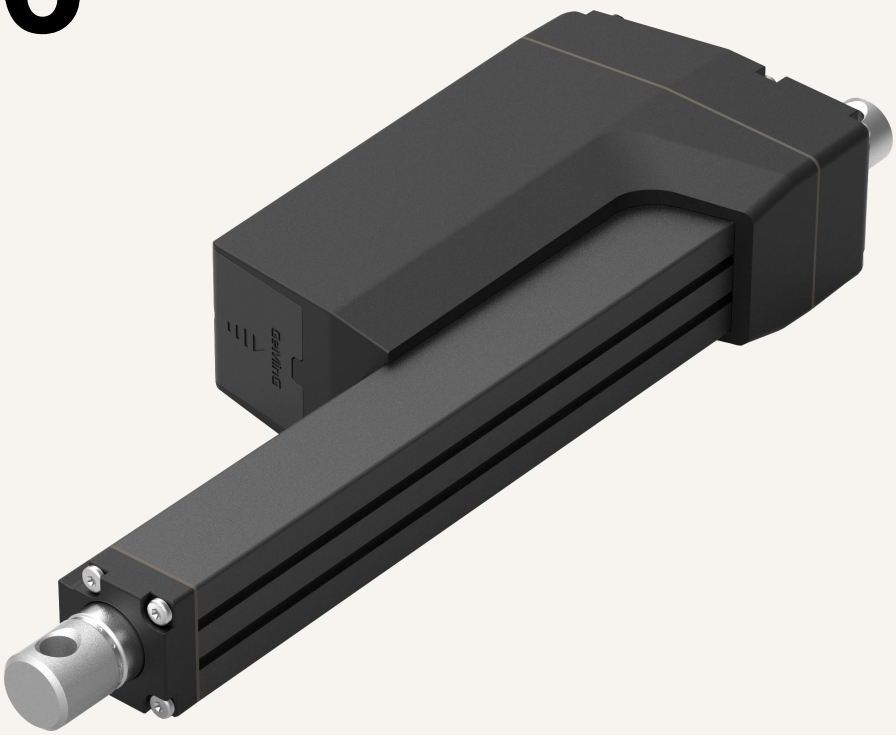
Series
Actuators

GeMinG China LimiteD
www.GeMingag.com

# HTW76

## Series

Linear Actuators



### Product Category

1、 Industrial application

2、Military application

3、Agricultural machinery

HTW76 is a push rod specially designed for harsh industrial environments. It is especially suitable for some mechanical equipment with high consumption, such as agricultural machinery and industrial application equipment. If you're looking for an actuator that can be used in harsh industrial environments and meet strict specifications, smart electromechanical actuators feature on-board electronics that eliminate the need for a separate control system. With higher power up to 16 kN, it opens up more possibilities for hydraulic steering electric applications. HTW76 will be the best choice

### Functional Overview

| | |
|---|---|
| Voltage: | 12V, 24V, 36V, 48V DC |
| Motor options: | DC motor, brushless DC motor |
| Maximum thrust (pull force): | 16,000N / 14,000N |
| Slowest speed under load: | 5.0mm/s (load 16,000N) |
| Maximum speed under load: | 83 mm/s (load 1,000N) |
| Minimum installation size: | Stroke + 250mm |
| Dynamic lateral moment: | 1,000Nm |
| Static lateral moment: | 800Nm |
| color: | Silver gray, black |
| Voice: | 60~68 DB |
| Adaptable temperature range: | -45°C ~ +75°C |
| Protection level: | IP66 |
| Screw selection: | I ball screw, trapezoidal screw |
| Switch type: | Built-in limit switch, |
| Signal options: | Potentiometer, Hall sensor, endpoint signal |
| Control options: | Synchronous control, independent control, |
| safety certificate: | integrated control, CAN bus control, Comply with ISO9001-2008, |
| High-strength metal zinc alloy gearbox and housing, | CE and RoHS regulations, |

## Electrical conversion trend accelerates

Easier installation, better control and less complexity

Installation is simpler, smaller and faster

Easier control and greater precision

## Electric execution requires fewer components and is faster and easier

to install than hydraulic or pneumatic systems

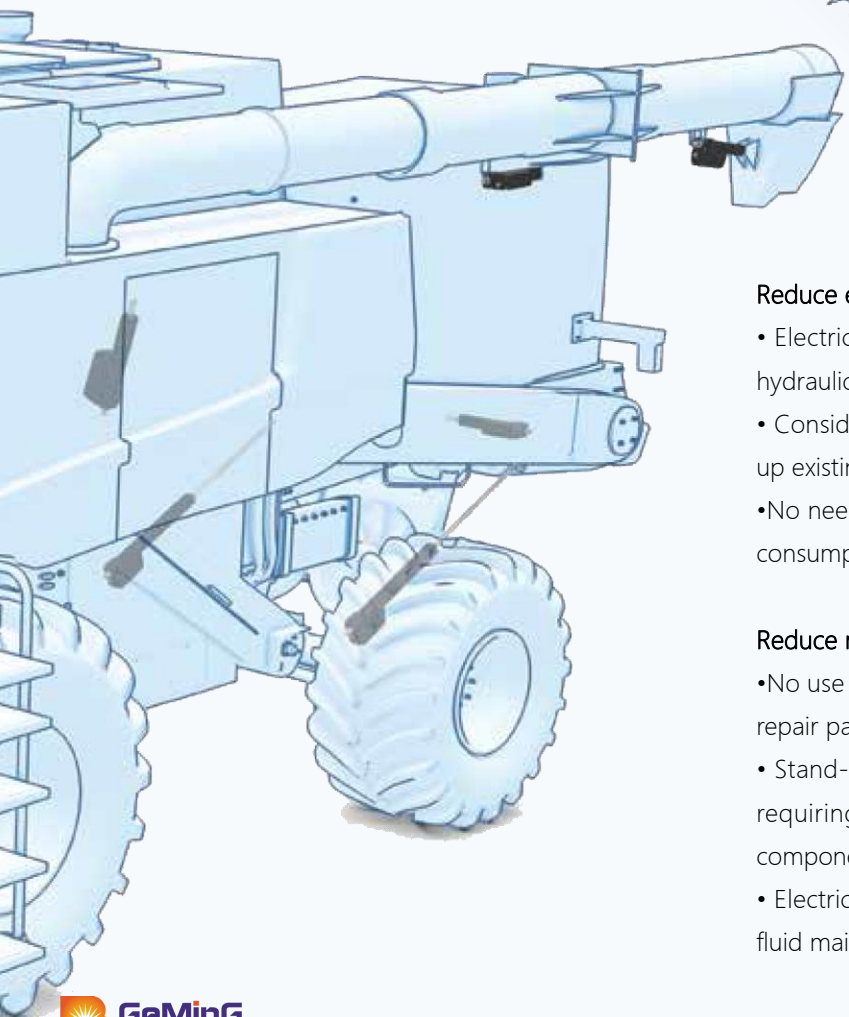
• Component costs are lower than comparable cost hydraulic or pneumatic systems

• Smaller footprint simplifies and speeds design

## Easier control and greater precision

• Fully electrical components mean easier integration, fewer control components and less complexity

• Electric actuators react faster, more predictably, and won't drift when power is turned off



## Reduce energy costs

• Electric motors are inherently more efficient than pneumatic or hydraulic motors

• Consider potential parasitic power consumption without scaling up existing systems

•No need for any power supply to maintain load reducing power consumption

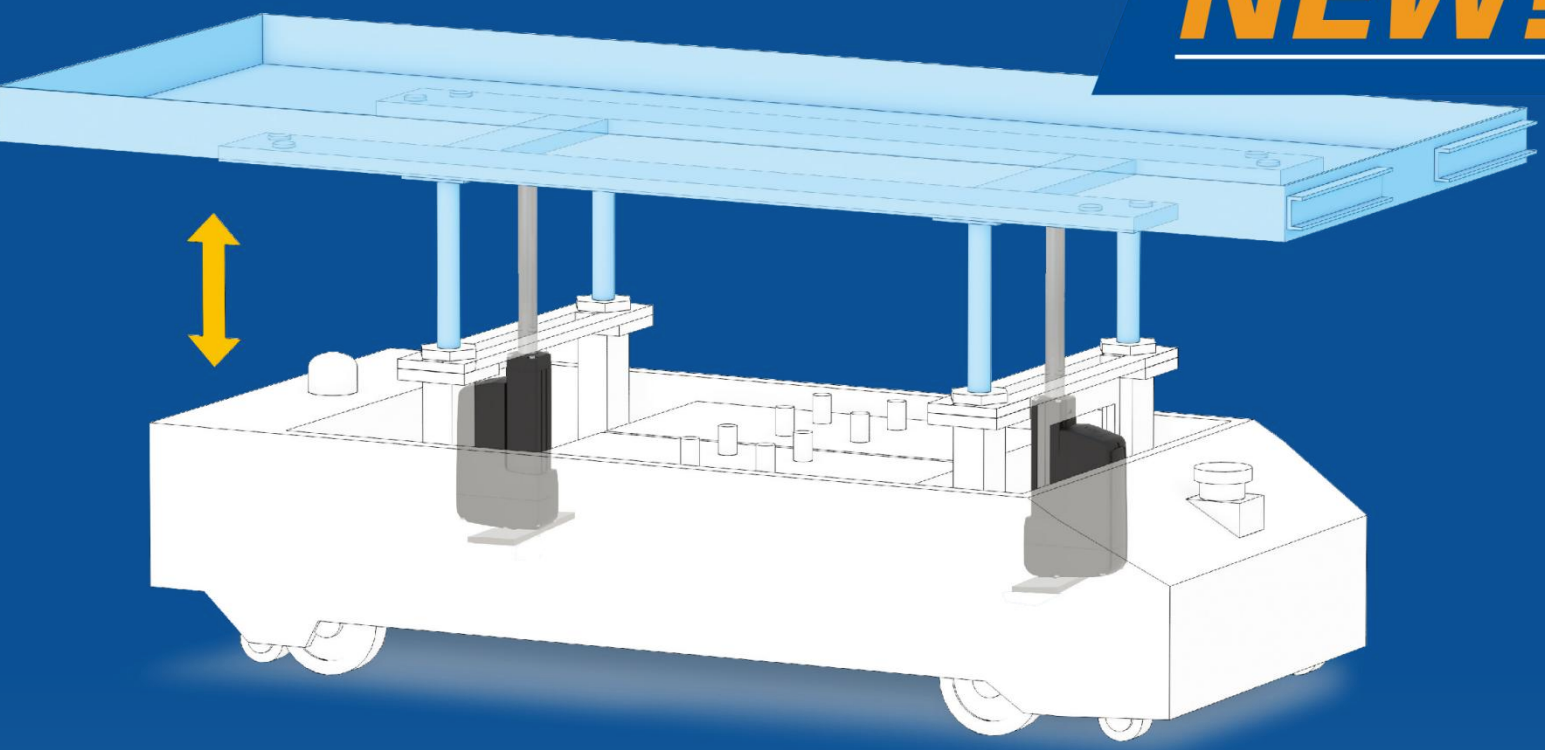
## Reduce maintenance

•No use of hydraulic pumps, valves or hoses to reduce downtime, repair parts and replacement

• Stand-alone device electronics with smart onboard equipment requiring zero maintenance and increasing design flexibility for component placement

• Electric execution eliminates the cost and hassle associated with fluid maintenance

NEW!



# Rear installation can be retrofitted with flange installation

## Electric linear actuators for automated guided vehicles, mobile equipment and industrial automation

height adjustment

Positioning adjustment

More compact design,

making it easier to install in small spaces,

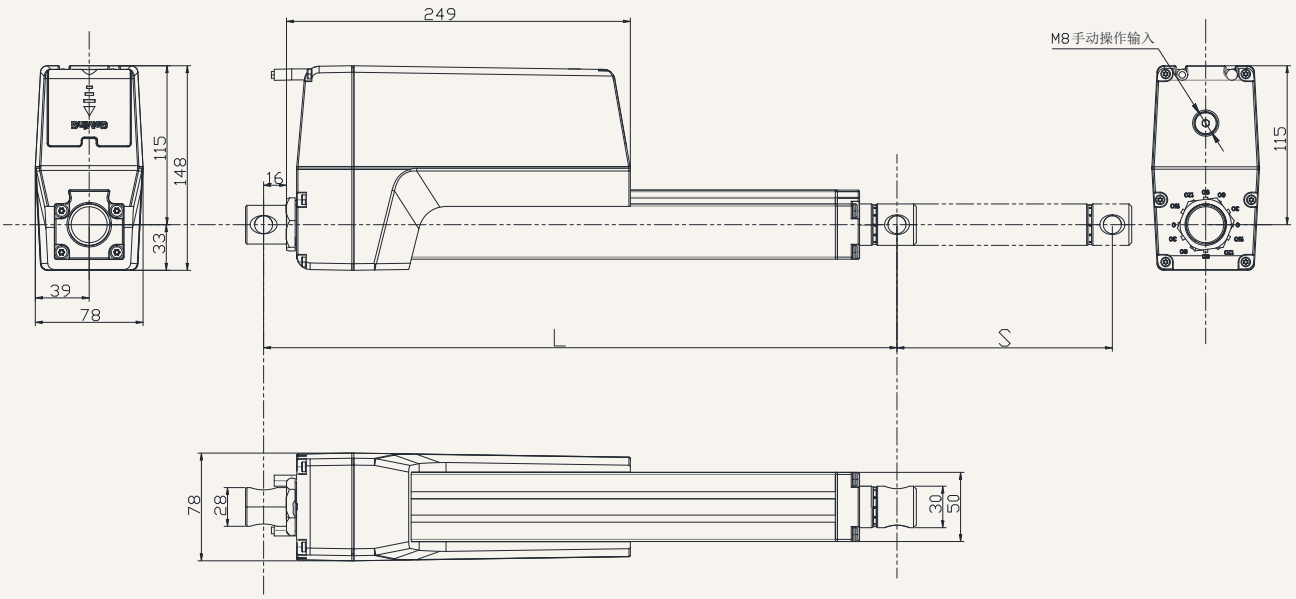
Very suitable for designing different types of automation equipment,

unmanned trucks and lifting equipment,

All while retaining many of the benefits that make it so popular!

## Drawings

### Standard size
MM




S: Stroke

L: Retracted length

L= Stroke +250mm

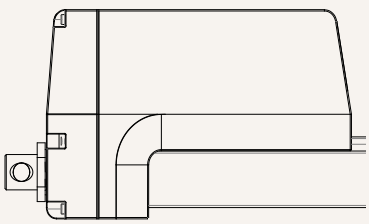
Greater than 600MM stroke, installation dimensions L= Stroke +300MM

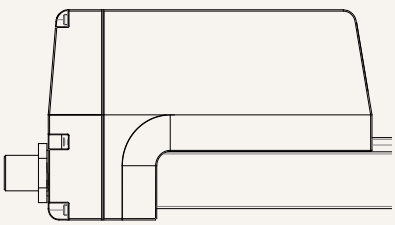
## Installation angle (counterclockwise):

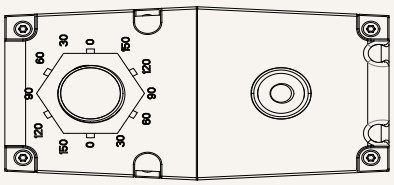
0 =0 Degrees

9 =90 Degrees

G=Adjust at will







## load and speed

| Code | Rated load Thrust N | Pull N | Self-locking force static conditions static N | Rated load current A | Output speed no load 24V DC mm/s | Rated load 24V DC mm/s |
|---|---|---|---|---|---|---|
| Motor voltage (24V DC- 0.4KW rare earth motor) | | | | | | |
| Model: HTW78 | | | | | | |
| A | 18,000 | 18,000 | 20,000 | 18.3 | 5.0 | 4.0 |
| B | 16,000 | 16,000 | 20,000 | 18.3 | 7.0 | 6.0 |
| C | 13,000 | 13,000 | 15,000 | 18.3 | 10 | 8.0 |
| D | 8,500 | 8,500 | 9,500 | 18.3 | 15 | 12 |
| E | 7,500 | 7,500 | 8,500 | 18.3 | 17 | 14 |
| F | 5,600 | 5,600 | 6,000 | 18.3 | 22 | 18 |
| G | 3,800 | 3,800 | 4,600 | 18.3 | 33 | 27 |
| H | 2,700 | 2,700 | 2,700 | 18.3 | 50 | 40 |
| I | 2,200 | 2,200 | 3,000 | 18.3 | 67 | 53 |
| J | 1,200 | 1,200 | 1,200 | 18.3 | 130 | 110 |
| K | 750 | 750 | 750 | 18.3 | 200 | 170 |
| Motor voltage (24V DC- 0.3KW rare earth motor) | | | | | | |
| Model: HTW77 | | | | | | |
| A | 16,000 | 14,000 | 20,000 | 13.8 | 5.0 | 4.0 |
| B | 14,000 | 14,000 | 20,000 | 13.8 | 7.0 | 6.0 |
| C | 11,000 | 11,000 | 15,000 | 13.8 | 9.0 | 7.0 |
| D | 7,100 | 7,100 | 7,100 | 13.8 | 15 | 12 |
| E | 6,500 | 6,500 | 6,500 | 13.8 | 19 | 15 |
| F | 4,200 | 4,200 | 4,200 | 13.8 | 29 | 23 |
| G | 3,600 | 3,600 | 3,600 | 13.8 | 33 | 26 |
| H | 2,700 | 2,700 | 2,700 | 13.8 | 44 | 35 |

load and speed

| Code | Rated load Thrust N | Pull N | Self-locking force static conditions static N | Rated load current A | Output speed no load 24V DC mm/s | Rated load 24V DC mm/s |
|---|---|---|---|---|---|---|
| Motor voltage (24V DC- 0.18KW rare earth motor) | | | | | | |
| Model: HTW76 | | | | | | |
| A | 10,000 | 10,000 | 15,000 | 10.5 | 5.0 | 4.0 |
| B | 8,000 | 8,000 | 12,000 | 10.5 | 7.0 | 6.0 |
| C | 6,000 | 11,000 | 15,000 | 10.5 | 9.0 | 7.0 |
| D | 7,100 | 7,100 | 7,100 | 10.5 | 15 | 12 |
| E | 6,500 | 6,500 | 6,500 | 10.5 | 19 | 15 |
| F | 4,200 | 4,200 | 4,200 | 10.5 | 29 | 23 |
| G | 3,600 | 3,600 | 3,600 | 10.5 | 33 | 26 |
| H | 2,700 | 2,700 | 2,700 | 10.5 | 44 | 35 |
| I | 1,800 | 1,800 | 1,800 | 10.5 | 66 | 53 |
| J | 1,200 | 1,200 | 1,200 | 10.5 | 100 | 80 |
| K | 750 | 750 | 750 | 10.5 | 130 | 100 |

Remark

1. The speed and current on the upper side are the materials that extend when pushed.

2. For 12V motor, the speed is about the same and the current is about 2 times higher.

3. The current & speed in the table are the test average values in the extension direction under thrust application.

4. The current & speed in the table and graph are the test average values of the GeMinG control box configuration, and there is an error of about 10% depending on the control box model.

(The voltage is about 29V DC at no load, and drops to about 24V DC at rated load)

Stroke: minimum value ≥ 20mm, please refer to the table below for the maximum value of load and stroke

| load (N) | Maximum stroke (mm) |
|---|---|
| 16,000 | 50-200 |
| 15,000 | 201-300 |
| 12,000 | 301-400 |
| 7,000 | 401-600 |
| 6,000 | 601-900 |

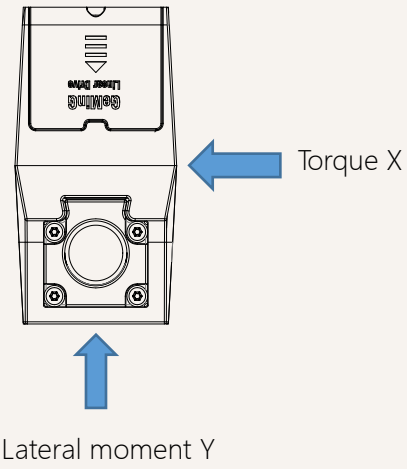
**Remark:**

Lateral moment Y direction = X*0.8

Static lateral moment = dynamic*2

Dynamic lateral moment (Nm)-X direction

| stroke | S+250 | S+300 |
|---|---|---|
| 100-200 | 200 | 300 |
| 300-500 | 150 | 250 |
| 500-700 | 100 | 200 |
| 700-900 | 80 | 100 |



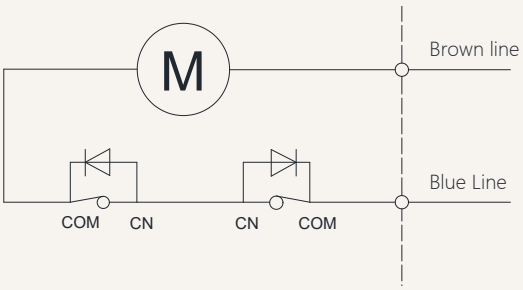

Stroke installation size reference chart

| HTW76 Series | stroke ± 2 (mm) | | | | | Install ± 2 (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| strokeMM | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| Install MM | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 |
| weight KG | 8.5 | 8.8 | 9.1 | 9.4 | 9.7 | 10.1 | 10.5 | 10.9 | 11.5 |

## Actuator wiring diagram

No signal feedback wiring diagram

Code: N




Wiring Instructions:

1】Brown lead: motor positive +

2】Blue lead: motor negative pole -

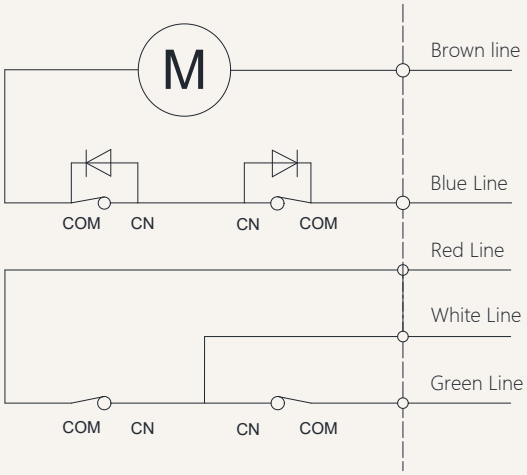
3】When the push rod is extended: the brown wire is positive +, the blue wire is negative -

4】When the push rod is retracted: the blue line is positive +, the brown line is negative -

## Signal feedback An electrical signal & No electrical signal

Passive or active endpoint signal wiring diagram

Code: N passive signal, Code: Y active signal




Wiring Instructions:

1】Brown lead: positive pole of motor +

2】Blue lead: negative pole of motor -

3】When the push rod is extended: brown wire positive pole +, blue wire negative pole -

4】When the push rod is retracted: blue wire positive pole +, brown wire negative pole -

5】White wire: signal output common line.

6】White and red wire: extension end signal,

7】White and green wire: retraction end signal,

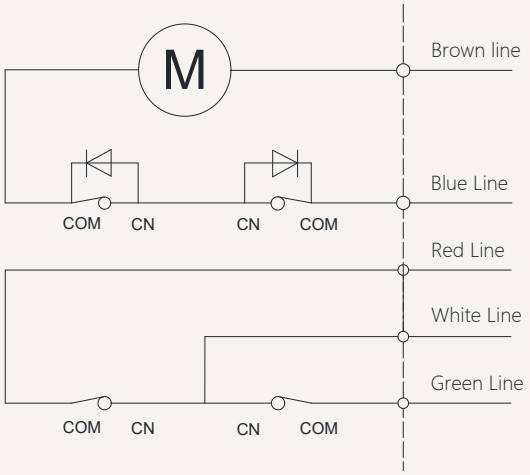
## Other signal descriptions

| Feedback signal | Description | Function |
|---|---|---|
| An electrical signal endpoint feedback signal | Voltage with this model | When the push rod reaches the end point, a signal will be fed back. This signal will always exist and will disappear during the operation of the push rod., |
| No electrical signal endpoint feedback signal | No voltage | When the push rod reaches the end point, it will feedback a signal. This signal always exists when the input power is not turned off. When the input power is turned off, the signal disappears. The signal will also disappear during the operation. |
| Note: For other needs, please contact the GeMinG team | | |

## Actuator wiring diagram Built-in control module

Built-in controller wiring diagram

Code：NY




Wiring Instructions:

1】Brown lead: motor positive +

2】Blue lead: motor negative pole -

3】When the push rod is extended: white line + red line

4】When the push rod retracts: white line + green line

5】White line: control output common line.

6】White and red lines: stretch out,

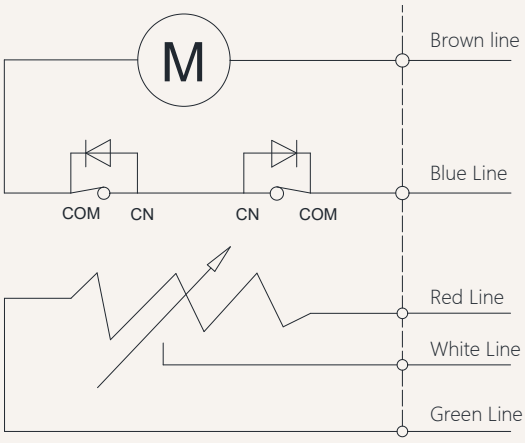
7】White and green lines: retract,

8】Wireless remote control, use wired control simultaneously.

## Signal feedback Potentiometer

Potentiometer wiring diagram

Code：K




Wiring Instructions:

1】Brown lead: positive pole of motor +

2】Blue lead: negative pole of motor -

3】When the push rod is extended: brown wire positive pole +, blue wire negative pole -

4】When the push rod is retracted: blue wire positive pole +, brown wire negative pole -

5】White and yellow leads: variable resistance signal output.

6】When the push rod is extended: red and white leads-resistance value gradually increases,

---------red and yellow leads-resistance value gradually decreases.

7】When the push rod is retracted: red and white leads-resistance value gradually decreases,

---------red and yellow leads-resistance value gradually increases.

## Potentiometer Configuration Form

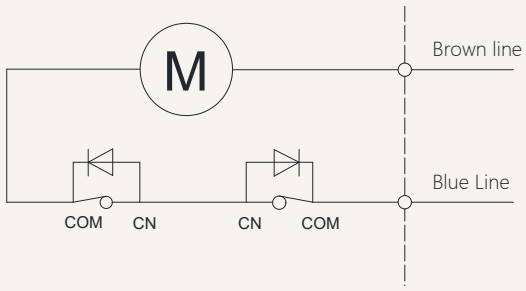
| Transmission Code (See page 5) | Limit travel range | Resistance range unit（KΩ） | |
|---|---|---|---|
| A,C,E,G | 50-350MM | 50-200Stroke range5.0 | 50-300Stroke range7.5 |
| B,D,F | 50-550MM | 50-200Stroke range3.17 | 50-400Stroke range6.35 |

Note: Potentiometer resistance is 10KΩ, actual output resistance depends on specific stroke

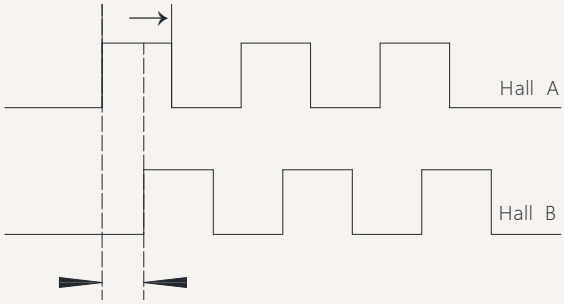
## Signal feedback Hall sensor

Hall signal motor circuit diagram

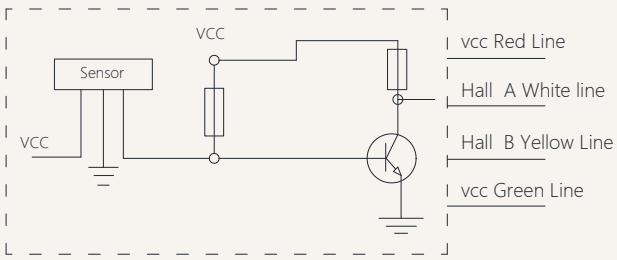
Code: H




Hall signal output waveform diagram




Schematic diagram of the internal circuit of the Hall signal




Wiring Instructions:

1】Brown lead: positive pole of motor +

2】Blue lead: negative pole of motor -

3】Red lead: VCC 5V voltage input +

4】Green lead: GND 5V voltage input -

5】White lead: Hall signal output A

6】Yellow lead: Hall signal output B

### Notes:

1) Support dual-channel/single-channel Hall encoder

2) Current-consuming digital output

3) High-speed response frequency from: 0 KHz-100 KHz

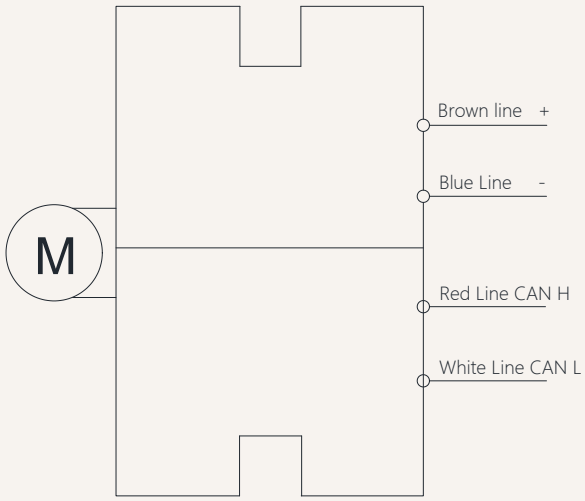
4) Applicable temperature range:-40 ℃~+125 ℃

| Characteristics | Symbol | Test conditions | MI | RE | M | Unit |
|---|---|---|---|---|---|---|
| Supply voltage | Vcc | ---- | 3.5 | --- | 24 | V |
| Output saturation voltage | Vce/sat | Vcc=14V ; Ic=20mA | --- | 300 | 700 | MV |
| Output leakage current | 1 cex | Vce=14V ; Vcc=14V | --- | <0 | 10 | UA |
| Input voltage | 1 ce | Vcc=20V ; Output open | --- | 1 | 10 | M |
| Output fall time | R | Vcc=14V ; RL=820Ω ; CL=20pF | --- | 0.3 | 1.5 | US |

## Signal feedback CAN bus

CANCommunication motor circuit diagram

Code：AN




Wiring Instructions:

1】Brown lead: positive pole of motor +

2】Blue lead: negative pole of motor -

6】Red lead: CAN H

7】White lead: CAN L

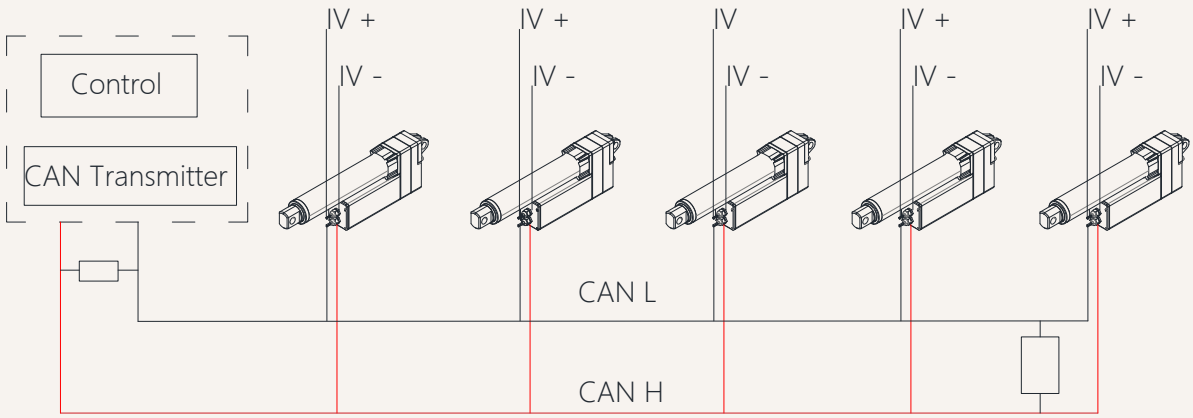
Note:

1. The brown\blue power cord cannot be reversed, otherwise the driver may be burned.
2. With CAN bus, excluding terminal resistor: compliant with J1939
3. Speed: Baud rate: 500kbps

Communication wiring: shielded twisted pair

Cable impedance: 120Ω (+10%)

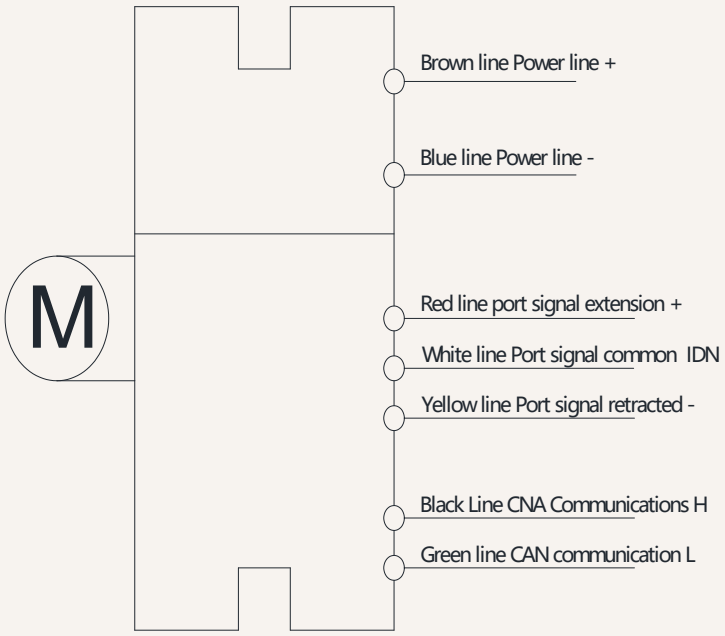
CAN Control instructions



## Signal feedback Port Control

Schematic diagram of port control motor circuit

Code： Y




Wiring Instructions:

1】Brown lead: Power supply positive (+)
2】Blue lead: Power supply negative (-)
3】Red lead: Port signal extended (+)
4】White lead: Port signal common (IDN)
5】Yellow lead: Port signal retracted (-)
6】Black lead: CAN communication (H)
6】Green lead: CAN communication (L)

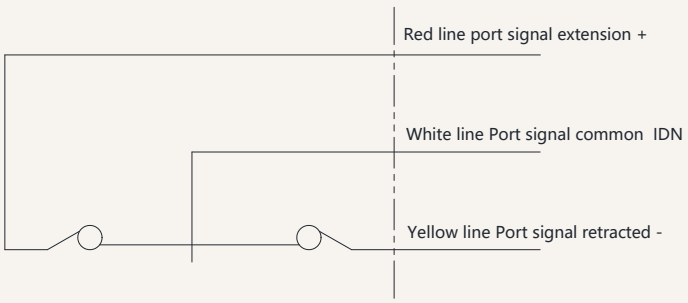
Note:

1. Do not connect the brown and blue power cables in reverse, as this may damage the driver.
2. CAN bus included, does not include termination resistors; complies with J1939.
3. Speed: Baud rate: 500kbps

Communication wiring: Shielded twisted pair

Cable impedance: 120Ω (+/-10%)

CAN Control instructions




1】When the push rod is extended: Red and white leads indicate the push rod is extended.

2】When the push rod is retracted: Yellow and white leads indicate the push rod is retracted.

# HTW76 Model Description Selection Code Table

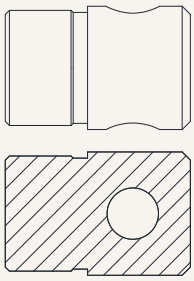
| HTW76 | - | 24 | A | *** | *** | - | O1 | O1 | 0 | 1 | T | A | N | 07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ① | | ② | ③ | ④ | ⑤ | | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ |

| | | | | | |
|---|---|---|---|---|---|
| ① | Product number | HTW76=180W Ordinary motor | HTW77=300W Rare earth motor | HTW78=400W brushless motor | |
| ② | Voltage | 24=24V DC | 36=36V DC | 48=48V DC | 12= 12V DC |
| ③ | Load(n)@Speed (mm/s) | See page 06 | | | |
| ④ | Stroke(mm) | See page 06 | | | |
| ⑤ | Installation size(mm) | Note: Before selecting a size, please refer to the valid data sheet! See page 05 | | | |
| ⑥ | Upper type See page 13 | O1 =Ordinary type, hole diameter12.5mm | | O2 = Ordinary type, hole diameter 13.5mm | |
| | | U1 = Groove width 10.5mm, hole diameter 12.5mm | | U2 = Groove width 10.5mm, hole diameter 13.5mm | |
| | | M1 = Type M, M18 thread, depth 20 mm | | M2 = MType M, M20 thread, depth20 mm | |
| | | T1 = T-type, M18 thread, length 20mm | | T2 = T-type, M20 thread, length 20mm | |
| | | L1 =L shape, width 20mm, aperture 12.5mm | | L2 = L shape, width 20mm, aperture 13.5mm | |
| | | G1 = Spherical bearing, bore 14mm, model GS14 | | G2 = Spherical bearing, bore 16mm, modelGS16 | |
| ⑦ | lower type See page 14 | O1 =Ordinary type, hole diameter12.5mm | | O2 = Ordinary type, hole diameter 13.5mm | |
| | | U1 = Groove width 10.5mm, hole diameter 12.5mm | | U2 = Groove width 10.5mm, hole diameter 13.5mm | |
| | | M1 = Type M, M18 thread, depth 20 mm | | M2 = MType M, M20 thread, depth20 mm | |
| | | T1 = T-type, M18 thread, length 20mm | | T2 = T-type, M20 thread, length 20mm | |
| | | L1 =L shape, width 20mm, aperture 12.5mm | | L2 = L shape, width 20mm, aperture 13.5mm | |
| | | G1 = Spherical bearing, bore 14mm, model GS14 | | KZ = Customized | |
| ⑧ | Installation angle (counterclockwise) | 0 =0°, Degree | | 9 =90°, Degree | |
| ⑨ | Please refer to the outlet type | 1 = 1 2-core bare wire | 5 = 1 5-core bare wire | 6 = 1 6-core bare wire | |
| | | 7 = 1 2-core, 1 5-core bare wire | 2 = OI plug | 3 = 4-pin angled plug | |
| | | 4 = 4-pin straight plug | 9 = 6-pin straight plug | 8 = Waterproof plug | |
| | | 0 = Customized | | | |
| ⑩ | Lead screw options | G=Ball screw (default preferred) | | T = Trapezoidal screw | |
| ⑪ | Control method | A = No control | C = CAN bus | Y =Integrated wired control | N=Integrated wireless control |
| | | T = Synchronous control | D = Customized | | |
| ⑫ | Signal output options | N = None | H = Hall sensor | D = Potentiometer signal | U=active signal |
| | | W=passive signal | AN = CAN communication | | |
| ⑬ | Cable length | 07 =Cable length 0.7 M | 10 = Cable length 1.0 M | 15 =Cable length 1.5 M | 20= Cable length 2.0 M |
| | | 30 =Cable length 3.0 M | 40 =Cable length 4.0M | 50 =Cable length 5.0 M | 60= Cable length 6.0M |
| | | 70 =Cable length 7.0 M | 70 =Cable length 8.0 M | 90 =Cable length 9.0 M | 00 =Customization |

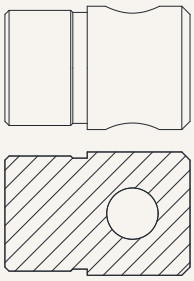
# HTW76 Attachment Description Selection Code Table

## Upper end form (extended):

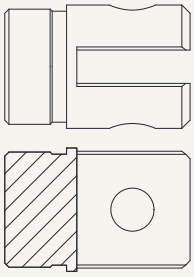
O1=Ordinary type, hole diameter 12.5mm



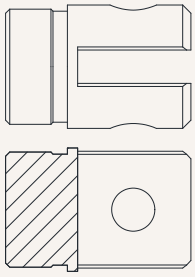
O2=Ordinary type, hole diameter 13.5mm



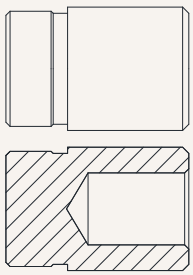
U1 = groove width 10.1mm, hole diameter 12.5mm



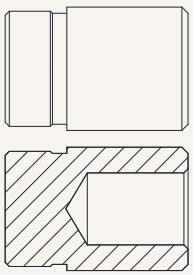
U2 = groove width 10.1mm, hole diameter 13.5mm



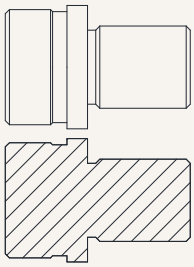
M1 = Type M, M18 thread, depth 20 mm



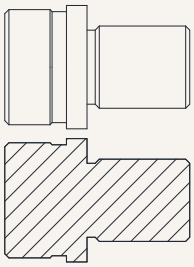
M2 = Type M, M20 thread, depth 20 mm



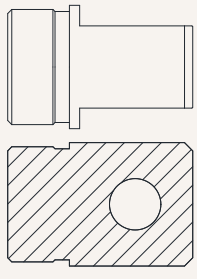
T1 = T-type, M18 thread, length 20mm



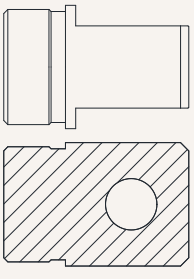
T2 = T-type, M20 thread, length 20mm



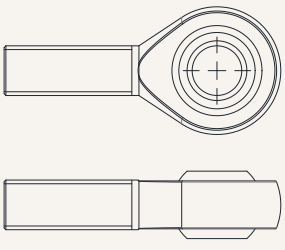
L1 = L shape, width 20mm, aperture 12.5mm



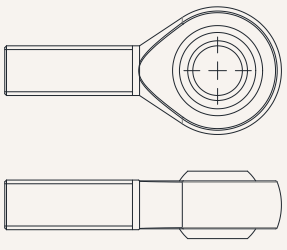
L2 =L shape, width 20mm, aperture 13.5mm



G1 = Spherical bearing, bore 14mm, model GS14



G1 = Spherical bearing, bore 16mm, model GS16

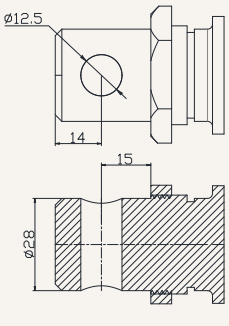


KZ = Customized

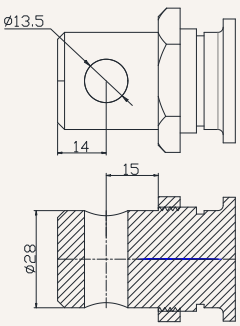
# HTW76 Attachment Description Selection Code Table

## Lower form (tail):

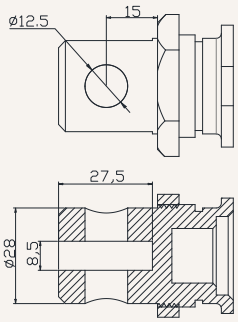
O1=Ordinary type, hole diameter 12.5mm



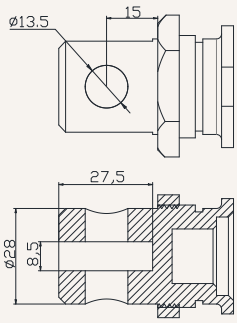

O2=Ordinary type, hole diameter 13.5mm



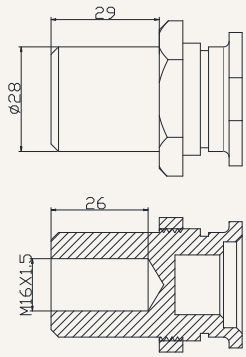

U1 = groove width 10.1mm, hole diameter 12.5mm



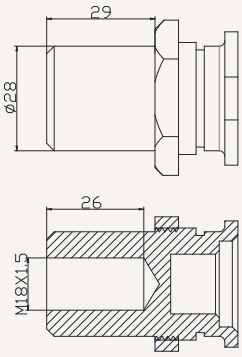

U2 = groove width 10.1mm, hole diameter 13.5mm



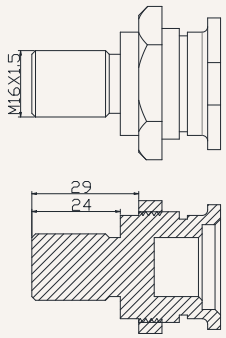

M1 = Type M, M18 thread, depth 20 mm



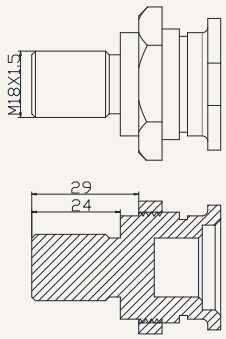

M2 = Type M, M20 thread, depth 20 mm



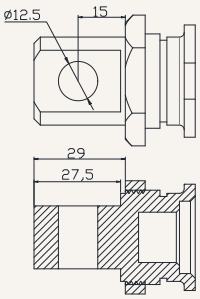

T1 = T-type, M18 thread, length 20mm



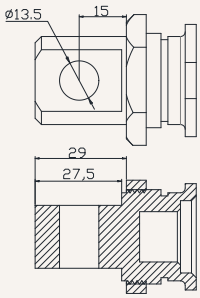

T2 = T-type, M20 thread, length 20mm



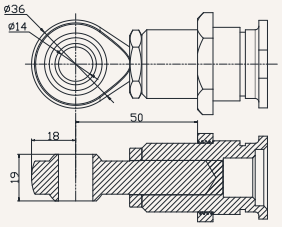

L1 = L shape, width 20mm, aperture 12.5mm



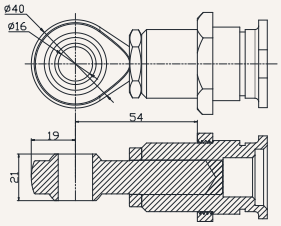

L2 =L shape, width 20mm, aperture 13.5mm




G1 = Spherical bearing, bore 14mm, model GS14



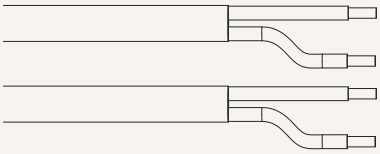

G1 = Spherical bearing, bore 16mm, model GS16



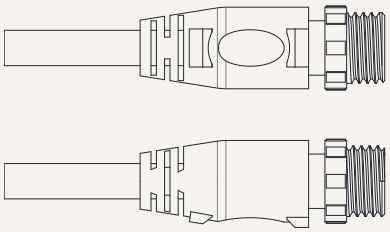

KZ = Customized

# Power Cord Plug Type Code Table

1 = Dare wire



8 = Waterproof plug



0 = Customized

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