

# CKTD-5K0S3K0 User Manual

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DR Drive Co., Ltd.

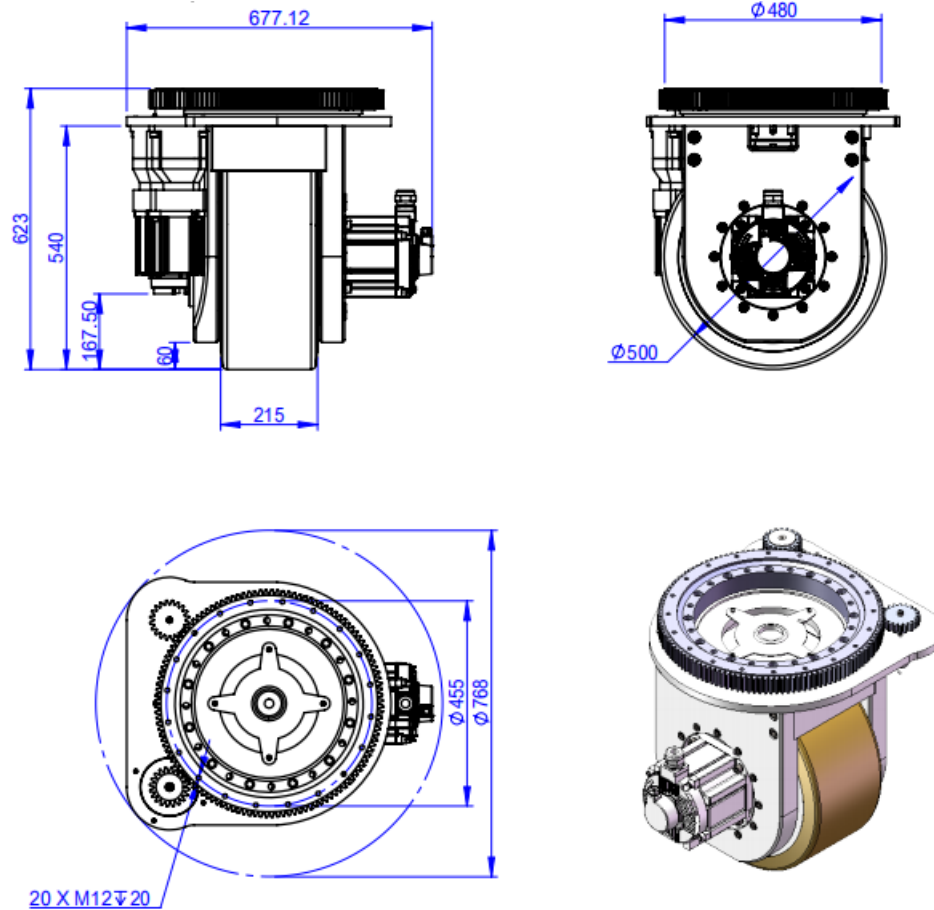
## Catalog

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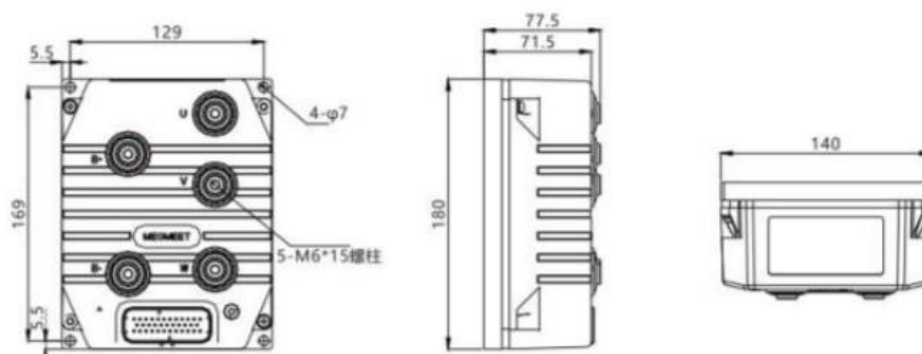
## 1. Dimensions and Parameters

### 1.1 Dimension

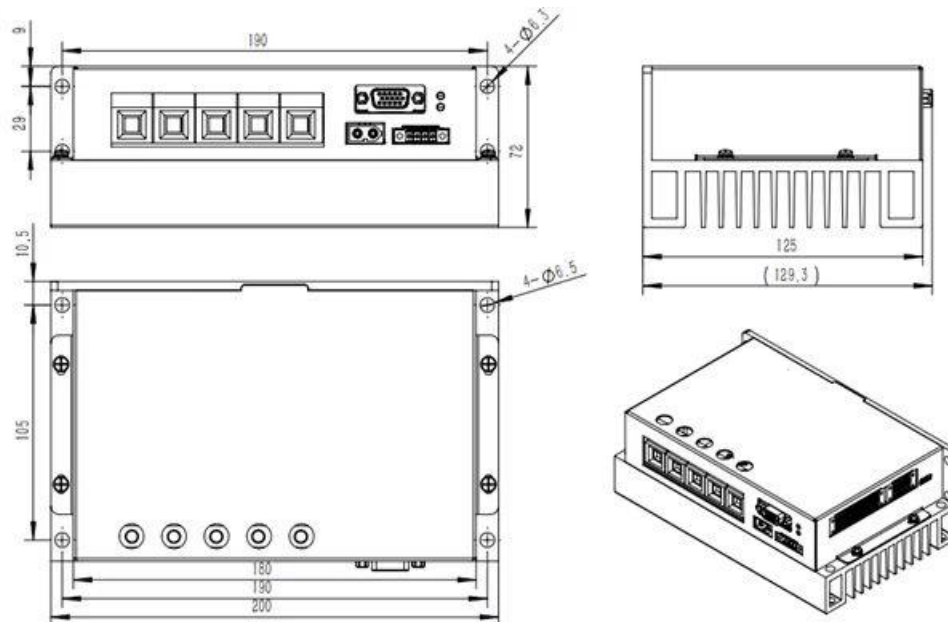
CKTD-5K0S3K0 Appearance and Dimensions



L532E-4835-PR Appearance and Dimensions



## MDSM90B96G Appearance and Dimensions

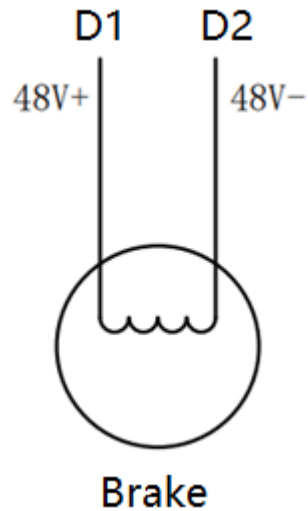


## 1.2 Motor parameters

| Traction Motor Parameters |                           |       |
|---------------------------|---------------------------|-------|
| 1                         | Motor Type                | Servo |
| 2                         | Rated Power (W)           | 5000  |
| 3                         | Rated voltage (V)         | 48    |
| 4                         | Rated speed (rpm)         | 2000  |
| 5                         | Rated current (A)         | 106   |
| 6                         | Gear ratio                | 120   |
| 7                         | Wheel diameter (mm)       | 500   |
| 8                         | Rated torque (Nm)         | 24    |
| Steering Motor Parameters |                           |       |
| 1                         | Motor Type                | Servo |
| 2                         | Rated Power (W)           | 3000  |
| 3                         | Rated voltage (V)         | 48    |
| 4                         | Rated speed (rpm)         | 3000  |
| 5                         | Rated current (A)         | 70    |
| 6                         | Gearbox reduction ratio   | 50    |
| 7                         | Master-slave gear ratio   | 6.2   |
| 8                         | Rated torque (Nm)         | 9.6   |
| 9                         | Maximum steering angle(°) | ±135  |

## 2. Electric Description

### 2.1 Traction motor and driver



Electrical schematic diagram of brake system

#### Traction Motor Interface Information

| Power Cable Sequence   |             |          |
|------------------------|-------------|----------|
| Pin                    | Color       | Function |
| 1                      | RED         | U        |
| 2                      | BLUE        | V        |
| 3                      | YELLOW      | W        |
| Encoder Cable Sequence |             |          |
| Pin                    | Color       | Function |
| 1                      |             | PE       |
| 2                      | GRAY        | COS+     |
| 3                      | RED/WHITE   | COS-     |
| 4                      | BLUE        | SIN-     |
| 5                      | PURPLE      | SIN+     |
| 6                      | RED/GREEN   | REF+     |
| 7                      | WHITE/BLACK | REF-     |

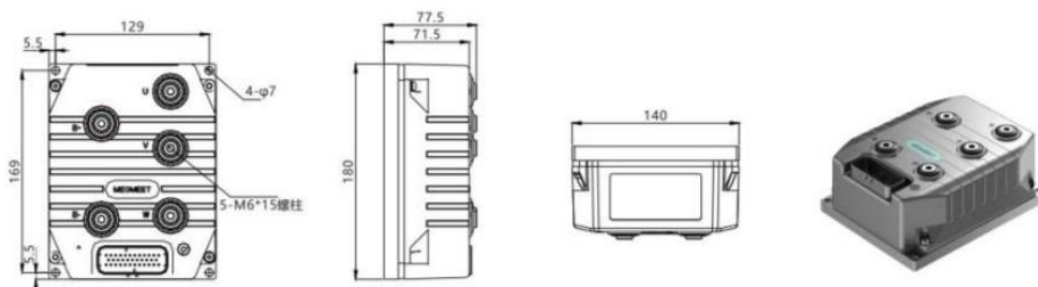
Traction Motor Power Cable Connector:



Traction Motor Encoder Connector:



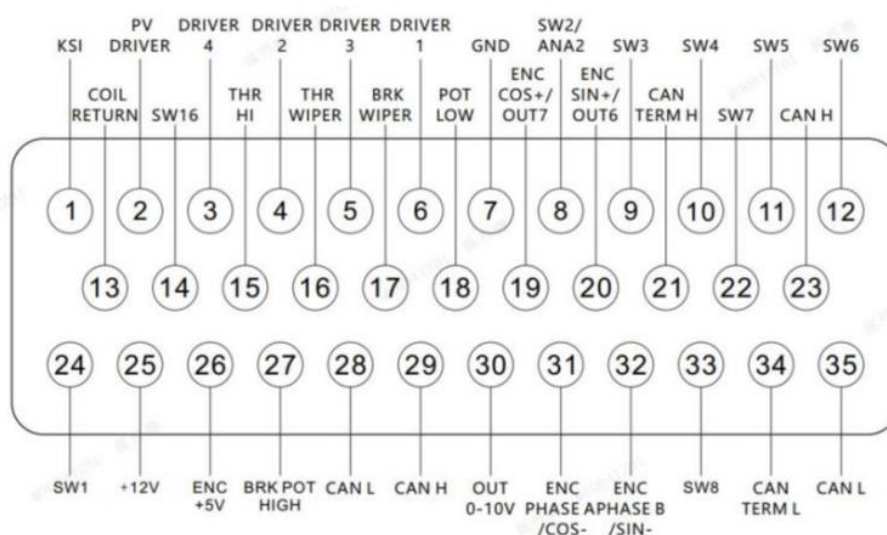
Traction Driver Interface Information



## Main Circuit Terminal Description

| Terminal Symbol | Function Description                                                |
|-----------------|---------------------------------------------------------------------|
| B+              | Controller positive bus input, connect to battery positive terminal |
| B-              | Controller negative bus input, connect to battery negative terminal |
| U               | Motor U-phase output                                                |
| V               | Motor V-phase output                                                |
| W               | Motor W-phase output                                                |

## Control Terminal Description

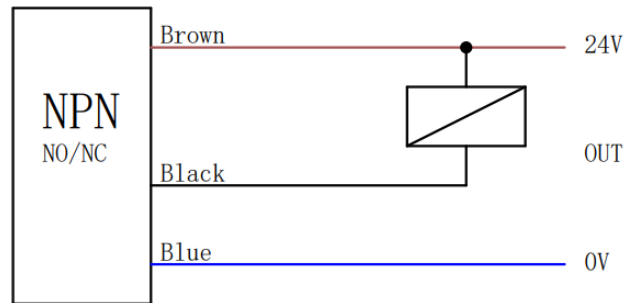


| Port No. | Port Name   | Signal Specification                                          | Functional Description                                                                                     |
|----------|-------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| J-01     | KSI         | Key Switch Input<br>0/48 V, active high, maximum current 5 A  | Supplies logic power to the controller and drive coil                                                      |
| J-02     | PROP DRIVER | Proportional Valve Drive +;<br>High-power output, 18 kHz, 2 A | Current-controlled coil type, used for proportional valve driving                                          |
| J-03     | DRIVER4     | Multi-valve Drive 4+;<br>High-power output, 200 Hz, 2 A       | General drive, low-frequency pulse-width modulation function                                               |
| J-04     | DRIVER2     | Multi-valve Drive 2+;<br>High-power output, 200 Hz, 3 A       | General drive, low-frequency pulse-width modulation function with slightly higher current rating, used for |

|      |                                                     |                                                                                   |                                                                                          |
|------|-----------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|      |                                                     |                                                                                   | electromagnetic brake                                                                    |
| J-05 | DRIVER3                                             | Multi-way valve drive 3+:<br>High-power output, 200 Hz, 2 A                       | General drive, low-frequency pulse-width modulation capability, used for pump contactors |
| J-06 | DRIVER1                                             | Main contactor;<br>High-power output, 200 Hz, 2 A                                 | Low-frequency pulse-width modulation capability, used for main contactor                 |
| J-07 | CND                                                 | Ground:                                                                           | Reference ground for analog signals and +12 V, +5 V power supplies                       |
| J-08 | ANA2                                                | Motor temperature input:<br>Analog input: provides 3.6 mA constant current output | Typically used as a motor temperature analog input.                                      |
| J-09 | SW3                                                 | Brake switch;<br>Digital input, 0/48 V, active high                               | General switch input 3, typically used for brake switch                                  |
| J-10 | SW4                                                 | Handbrake switch:<br>Digital input, 0/48 V, active high                           | General switch input 4                                                                   |
| J-11 | SW5                                                 | Seat A switch:<br>Digital input, 0/48 V, active high                              | General switch input 5                                                                   |
| J-12 | SW6                                                 | Seat B switch:<br>Digital input, 0/48 V, active high                              | General switch input 6                                                                   |
| J-13 | COIL<br>RETURN                                      | Contactor drive -:<br>0/48 V, active high, maximum current 12 A                   | Return terminal of all contactor coils                                                   |
| J-14 | SW16                                                | Deceleration switch:<br>Digital input, 0/48 V, active high                        | General switch input 16                                                                  |
| J-15 | THR_HI                                              | Throttle power supply +;<br>Maximum allowable current 100 mA                      | +5 V power supply provided externally                                                    |
| J-16 | THR WIPER                                           | Throttle signal;<br>Input voltage range 0–5 V (input impedance 4.9 kΩ)            | Accepts single-ended analog voltage input                                                |
| J-17 | BRK WIPER                                           | Brake signal:<br>Input voltage range 0–5 V (input impedance 4.9 kΩ)               | Accepts single-ended analog voltage input                                                |
| J-18 | POT-LOW                                             | Throttle ground:                                                                  |                                                                                          |
| J-19 | Asynchronous motor: out6<br>Synchronous motor: SIN+ | Asynchronous motor: digital output<br>Synchronous motor: resolver feedback sin+;  | Digital output<br>Resolver feedback SIN+ input                                           |

|      |                                                    |                                                                                    |                                                                                                            |
|------|----------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| J-20 | Asynchronous motor: out7<br>Synchronous motor: COS | Asynchronous motor: digital output<br>Synchronous motor: resolver feedback Cos+;   | Digital output<br>Resolver feedback COS+ input                                                             |
| J-21 | CAN_H                                              | Communication CAN H:                                                               | Instrument communication CAN H                                                                             |
| J-22 | SW7                                                | Forward switch:<br>Digital input, 0/48 V, active high                              | General switch input 7                                                                                     |
| J-23 | CAN_H                                              | CAN H(125k)<br>Communication CAN                                                   |                                                                                                            |
| J-24 | SW1                                                | Accelerator switch signal:<br>Digital input, 0/48 V, active high                   | General switch input 1                                                                                     |
| J-25 | +12V                                               | 12 V keyboard power supply<br>Maximum allowable current 100 mA                     | External +12 V power supply                                                                                |
| J-26 | ENC+5V                                             | Encoder 5V power supply:<br>Maximum allowable current 100 mA                       |                                                                                                            |
| J-27 | BRK-high                                           | Brake power supply:<br>Maximum allowable current 100 mA                            | +5 V power supply provided externally                                                                      |
| J-28 | PC-CAN H                                           | Host computer CANH                                                                 |                                                                                                            |
| J-29 | PC-CAN L                                           | Host computer CAN L                                                                |                                                                                                            |
| J-30 | 0-10V-out                                          | 0–10 V output:                                                                     | 0–10 V DC adjustable output                                                                                |
| J-31 | Asynchronous motor: A<br>Synchronous motor: COS-   | Asynchronous motor: Sensor A signal<br>Synchronous motor: Resolver feedback cos-:  | Asynchronous motor:<br>Quadrature encoder phase A input<br>Synchronous motor: Resolver feedback cos- input |
| J-32 | Asynchronous motor: VA<br>Synchronous motor: SIN-  | Asynchronous motor: Sensor B signal:<br>Synchronous motor: Resolver feedback sin-: | Asynchronous motor:<br>Quadrature encoder phase B input<br>Synchronous motor: Resolver feedback sin- input |
| J-33 | SW8                                                | Reverse Switch:<br>Digital input, 0/48 V, active high                              | General switch input 8,<br>typically used for the reverse switch.                                          |
| J-34 | CAN_T_L                                            | CAN L Termination Resistor:                                                        |                                                                                                            |
| J-35 | CAN L                                              | CAN L(1M) :                                                                        |                                                                                                            |

## 2.2 Steering motor and driver



NPN Proximity Switch Electrical Schematic Diagram

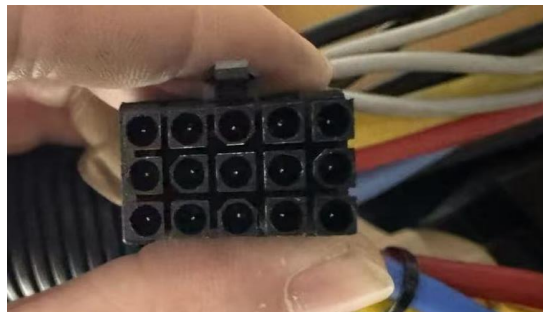
### Steering Motor Interface Information

| Power cable sequence   |       |          |
|------------------------|-------|----------|
| Pin                    | Color | Function |
| 1                      | RED   | U        |
| 2                      | YEL   | V        |
| 3                      | BLU   | W        |
| Encoder cable sequence |       |          |
| Pin                    |       | Function |
| 1                      |       | A        |
| 2                      |       | A-       |
| 3                      |       | B        |
| 4                      |       | B-       |
| 5                      |       | Z        |
| 6                      |       | Z-       |
| 7                      |       | U+       |
| 8                      |       | U-       |
| 9                      |       | V+       |
| 10                     |       | V-       |
| 11                     |       | W+       |
| 12                     |       | W-       |
| 13                     |       | 0V       |
| 14                     |       | 5V       |
| 15                     |       | PE       |

Power line connector:



Encoder line connector:



## 2.3 Steering driver interface information

### MDSM90B96G X5 Communication Interface Definition

| No    | Name | Definition                                                                  | Harness selection                                                                                                                                       | Terminal model                                   | Crimping tool                                                |
|-------|------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------|
| 1     | 485A | 485 Bus<br>(without 120Ω<br>resister)                                       | It is<br>recommended<br>to use a twisted<br>pair connection<br>with shielding,<br>Cross-sectional<br>area of copper<br>core wire:0.5<br>mm <sup>2</sup> | E0506 tube<br>type pre-<br>insulated<br>terminal | HSC8 6-4 Euro<br>type terminal<br>special<br>crimping pliers |
| 2     | 485A |                                                                             |                                                                                                                                                         |                                                  |                                                              |
| 3     | 485B |                                                                             |                                                                                                                                                         |                                                  |                                                              |
| 4     | 485B |                                                                             |                                                                                                                                                         |                                                  |                                                              |
| 5     | CANL | CAN Bus<br>(without 120Ω<br>resister)                                       |                                                                                                                                                         |                                                  |                                                              |
| 6     | CANL |                                                                             |                                                                                                                                                         |                                                  |                                                              |
| 7     | CANH |                                                                             |                                                                                                                                                         |                                                  |                                                              |
| 8     | CANH | An external termination<br>resistor must be added                           |                                                                                                                                                         |                                                  |                                                              |
| 9     | CGND | CAN bus and 485 bus<br>ground, it is<br>recommended to connect<br>to ground |                                                                                                                                                         |                                                  |                                                              |
| 10    | CGND |                                                                             |                                                                                                                                                         |                                                  |                                                              |
| Notes |      | Maximum terminal torque: 0.2N·m                                             |                                                                                                                                                         |                                                  |                                                              |

## MDSM90B96G X4 Interface Definition

| Pi<br>n<br>no. | Signal<br>name | Signal definition                                                                                                             | Remarks                                                                                                                                                                                                                                                                                                   |
|----------------|----------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1              | AIN0+          | The analog input main reactance is 10K,<br>Input voltage range:-10V~10V                                                       | <b>Wiring selection</b> : It is recommended to use a wire harness with a tinned copper braid with a copper core wire cross-sectional area of 0.5 mm <sup>2</sup><br><br><b>Terminal Mode</b> :E0506 Tube type pre- insulated terminal<br><br><b>Crimping Tool</b> :HSC8 6-4 Crimping tool for EU terminal |
| 2              | AIN0-          |                                                                                                                               |                                                                                                                                                                                                                                                                                                           |
| 3              | PULS+          | Pulse signal, operating voltage is 5V. If higher voltage is required, an external resistor must be connected in series.       |                                                                                                                                                                                                                                                                                                           |
| 4              | PULS-          |                                                                                                                               |                                                                                                                                                                                                                                                                                                           |
| 5              | OPC1           | For pulse signal input, compatible with 12V                                                                                   |                                                                                                                                                                                                                                                                                                           |
| 6              | OPC2           | For pulse signal input, compatible with 12V                                                                                   |                                                                                                                                                                                                                                                                                                           |
| 7              | SIGN+          | Direction signal, operating voltage is 5V. If a higher voltage is required, an external resistor must be connected in series. |                                                                                                                                                                                                                                                                                                           |
| 8              | SIGN-          |                                                                                                                               |                                                                                                                                                                                                                                                                                                           |
| 9              | DIN0           | Digital input channels 0, 1, and 2, compatible with voltages from 12V to 24V.                                                 |                                                                                                                                                                                                                                                                                                           |
| 10             | DIN1           |                                                                                                                               |                                                                                                                                                                                                                                                                                                           |
| 11             | DIN2           |                                                                                                                               |                                                                                                                                                                                                                                                                                                           |
| 12             | OUT0<br>+      | Digital output 0,open collector output withstand voltage 30V,300mA                                                            |                                                                                                                                                                                                                                                                                                           |
| 13             | DIN3           | Digital input 3,compatible voltage 12V~24V                                                                                    |                                                                                                                                                                                                                                                                                                           |
| 14             | OUT1<br>+      | Digital output 1,open collector output withstand voltage 30V,300mA                                                            |                                                                                                                                                                                                                                                                                                           |
| 15             | DIN4           | Digital input 4,compatible voltage 12V~24V                                                                                    |                                                                                                                                                                                                                                                                                                           |
| 16             | OUT2<br>+      | Digital output 2,open collector output withstand voltage 30V,300mA                                                            |                                                                                                                                                                                                                                                                                                           |
| 17             | DIN5           | Digital input 5,compatible voltage 12V~24V                                                                                    |                                                                                                                                                                                                                                                                                                           |
| 18             | OUT3<br>+      | Digital output 3,open collector output withstand voltage 30V,300mA                                                            |                                                                                                                                                                                                                                                                                                           |
| 19             | COM+           | The digital input is a common anode port,and the optocoupler input is a common positive                                       |                                                                                                                                                                                                                                                                                                           |

| Pin no. | Signal name | Signal definition                                               | Remarks |
|---------|-------------|-----------------------------------------------------------------|---------|
| 20      | COM-        | Digital output common ground port common ground for optocoupler |         |
| 21      | 5V          | Absolute value encoder 5V power supply positive pole            |         |
| 22      | GND         | Absolute value encoder 5V ground                                |         |
| 23      | D+          | 485 absolute value encoder serial                               |         |
| 24      | D-          | data cable                                                      |         |

## MDSM90B96G 的 X1 Feedback Definition

| Pin no                                                                                                                                                                                                                                                    | Signal | Pin no | Signal | Wiring selection                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1                                                                                                                                                                                                                                                         | B+     | 9      | V-     | It is recommended to use a wire harness with a tinned copper braid with a copper core wire cross-sectional area of 0.15 mm <sup>2</sup> |
| 2                                                                                                                                                                                                                                                         | A+     | 10     | U-     |                                                                                                                                         |
| 3                                                                                                                                                                                                                                                         | W+     | 11     | Z+     |                                                                                                                                         |
| 4                                                                                                                                                                                                                                                         | V+     | 12     | Z-     |                                                                                                                                         |
| 5                                                                                                                                                                                                                                                         | U+     | 13     | +5V    |                                                                                                                                         |
| 6                                                                                                                                                                                                                                                         | B-     | 14     | GND    |                                                                                                                                         |
| 7                                                                                                                                                                                                                                                         | A-     | 15     | PE     |                                                                                                                                         |
| 8                                                                                                                                                                                                                                                         | W-     |        |        |                                                                                                                                         |
| If it is Hall feedback, connect U+, V+, W+,+5V, GND. Single ended TTL feedback is connected to signals A+, B+, Z+, U+, V+, W+,+5V, GND. During welding, the pin number should correspond one-to-one with the pin number marked on the matching male head. |        |        |        |                                                                                                                                         |

## MDSM90B96G Power Interface Definition

| Pin No.     | Name | Definition                                                                                       | High temperature wear-resistant multi-strand copper core cross-sectional area |
|-------------|------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 1           | B+   | Input Power Positive                                                                             | 16~20mm <sup>2</sup>                                                          |
| 2           | B-   | Input Power Negative                                                                             | 16~20mm <sup>2</sup>                                                          |
| 5           | U    | Motor U phase                                                                                    | 16~20mm <sup>2</sup>                                                          |
| 6           | V    | Motor V phase                                                                                    | 16~20mm <sup>2</sup>                                                          |
| 7           | W    | Motor W phase                                                                                    | 16~20mm <sup>2</sup>                                                          |
| Precautions |      | ①Maximum torque of terminal: 2.0N · m<br>②Recommend using pre insulated terminal crimping pliers |                                                                               |

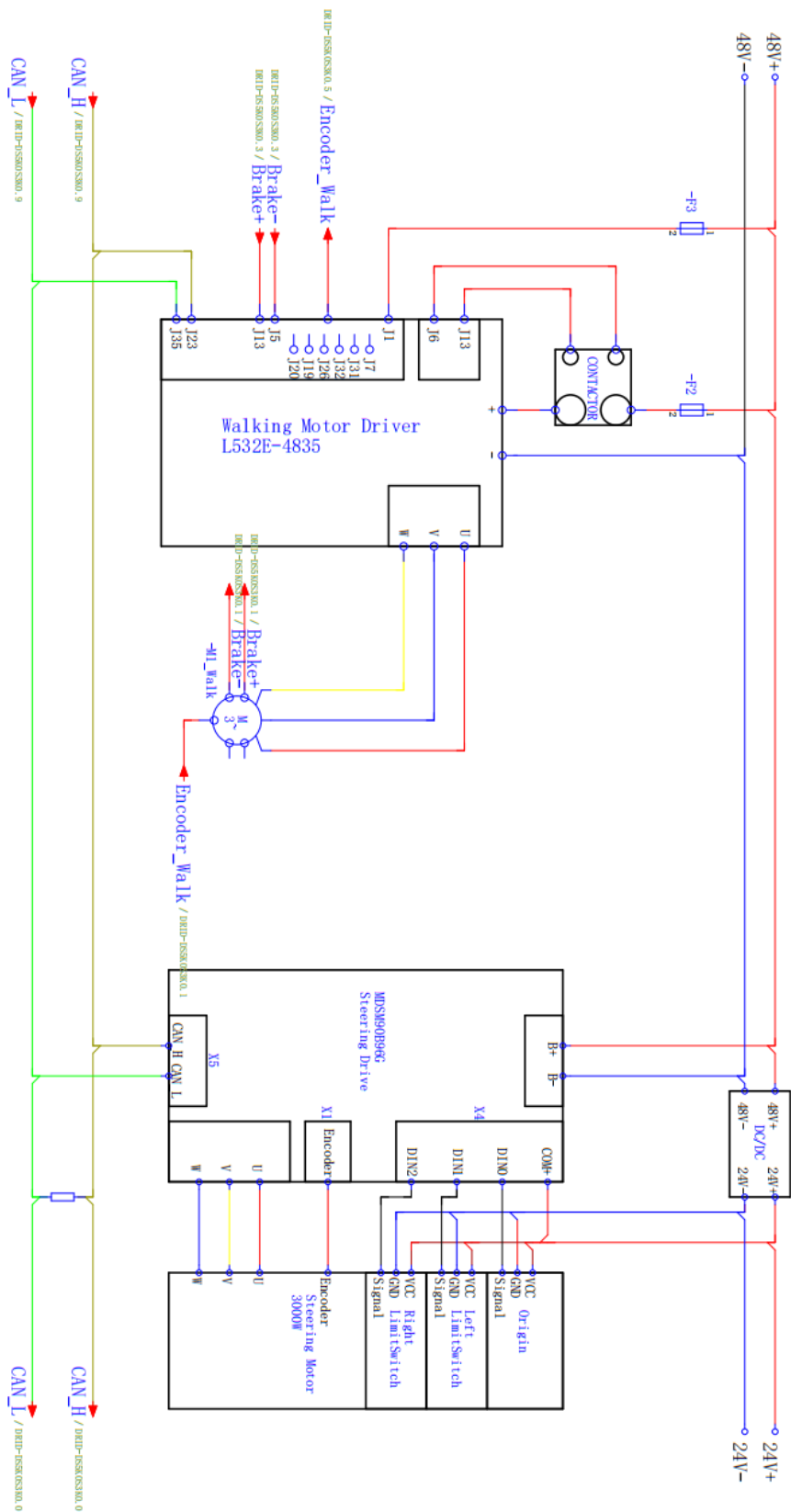
## MDSM90B96G X2 Interface Definition

| Pin No.    | Name | Definition                                      | High temperature wear-resistant multi-strand copper core cross-sectional area |
|------------|------|-------------------------------------------------|-------------------------------------------------------------------------------|
| 1          | RB+  | Connect a braking resistor, recommended 3Ω/800W | Suggested wire harness copper core cross-sectional area 6-10mm²               |
| 2          | RB-  |                                                 |                                                                               |
| Precaution |      |                                                 |                                                                               |

## MDSM90B96G X3 Interface Definition

| Pin No.    | Name   | Definition                                                                                                        | High temperature wear-resistant multi-strand copper core cross-sectional area         |
|------------|--------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1          | BVCC   | The power supply of the brake is positive, with a maximum withstand voltage of 60V.                               | Suggested cross-sectional area of wire harness copper core is 0.75-1.5mm <sup>2</sup> |
| 2          | BGND   | Brake Power Supply Ground                                                                                         |                                                                                       |
| 3          | Brake+ | Two lead ports led out from the brake coil                                                                        |                                                                                       |
| 4          | Brake- |                                                                                                                   |                                                                                       |
| Precaution |        | ① Maximum terminal torque: 0.2N · m<br>② Recommend using HSC8 6-4 European style terminal special crimping pliers |                                                                                       |

## 2.4 Steering wheel electrical connection example



## 3. Testing and Use

### 3.1 Traction motor testing

#### Step 1

Connect J28 and J29 to CAN L and CAN H of the CAN tool respectively.

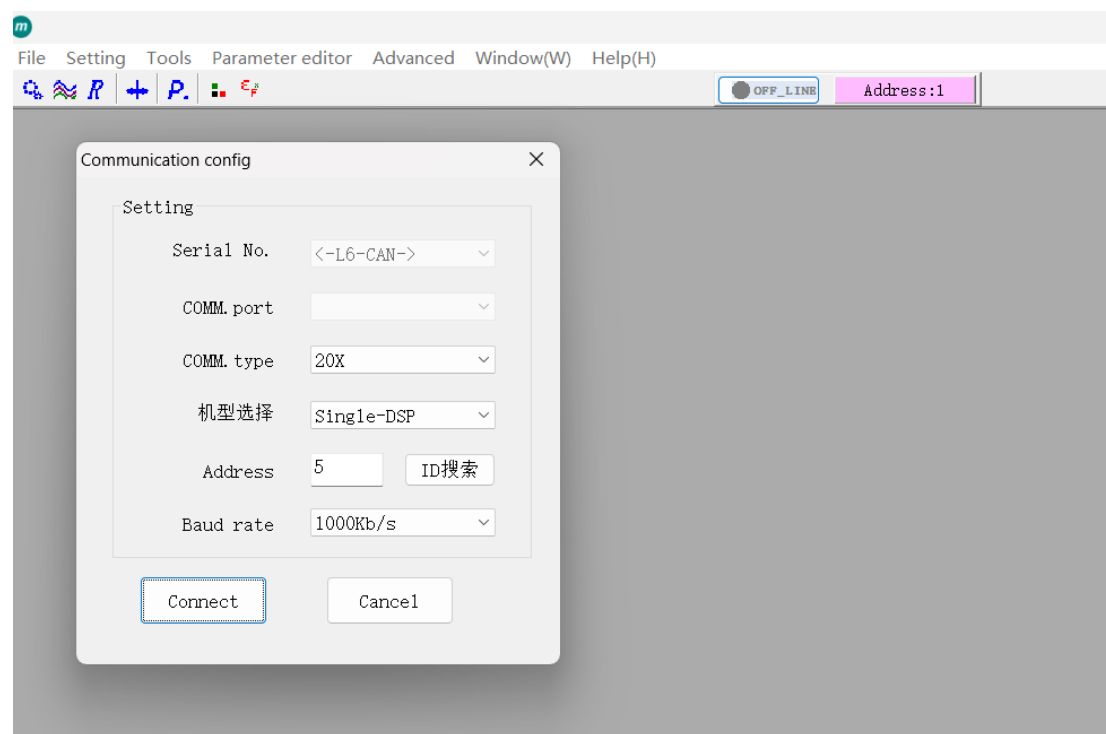
Connect the computer and the drive with the CAN tool. Then open the software.

#### Step 2

-> Setting

-> Communication

-> Connect

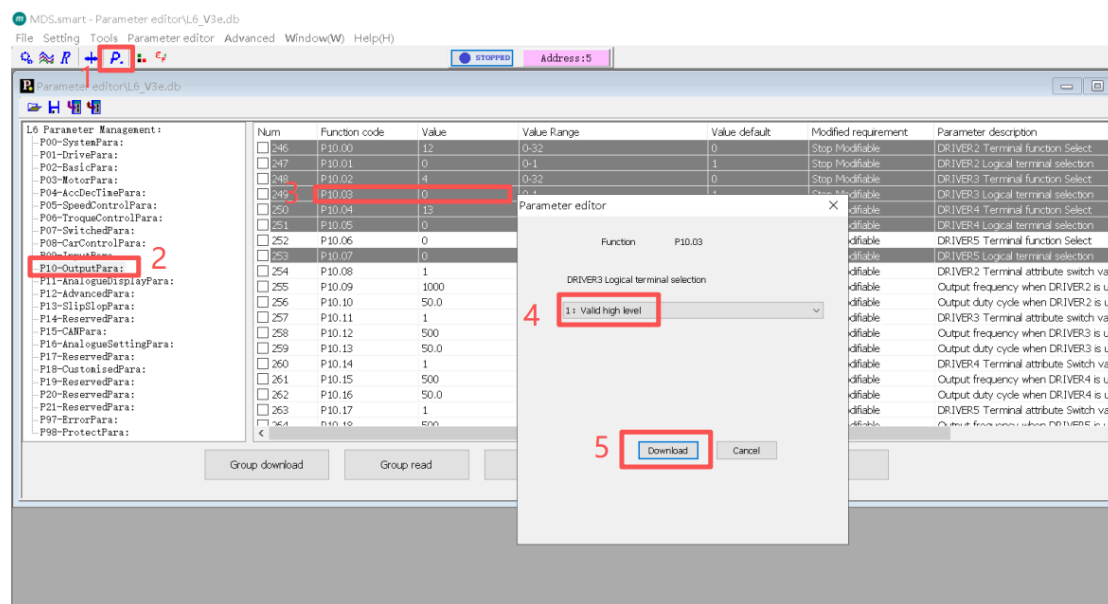


#### Step 3

Release the brake

-> set P10.03 1

Hearing the sound of 'da', the brake is released.



### Step 4

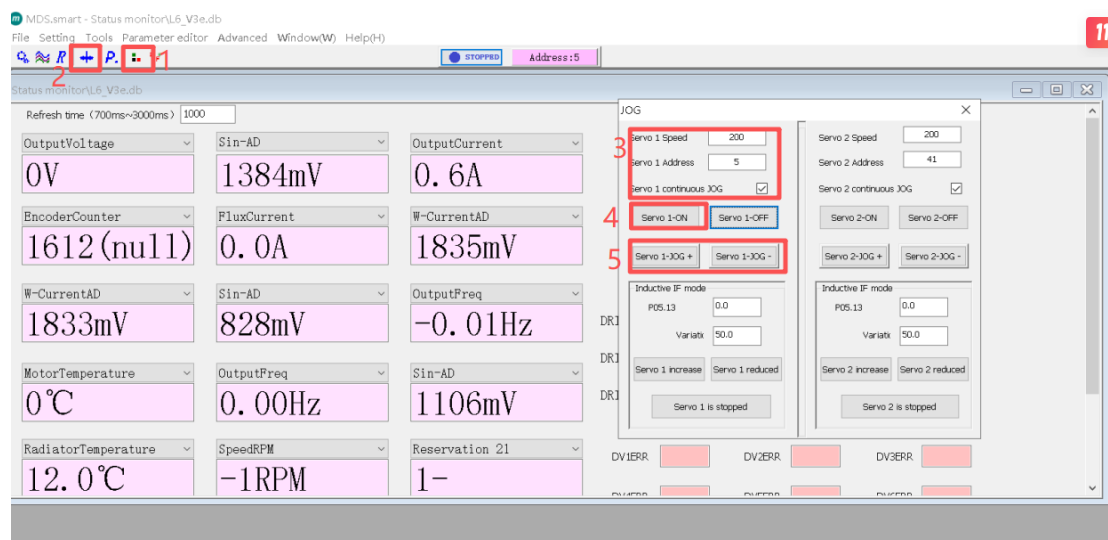
-> Open Status monitor and Jog RUN

-> Servo1 continues JOG

-> Servo1- ON

-> Setting: input speed(such as:1000)

-> Servo1- JOG+ or Servo1-JOG-



If the motor runs normally , the test is finished.

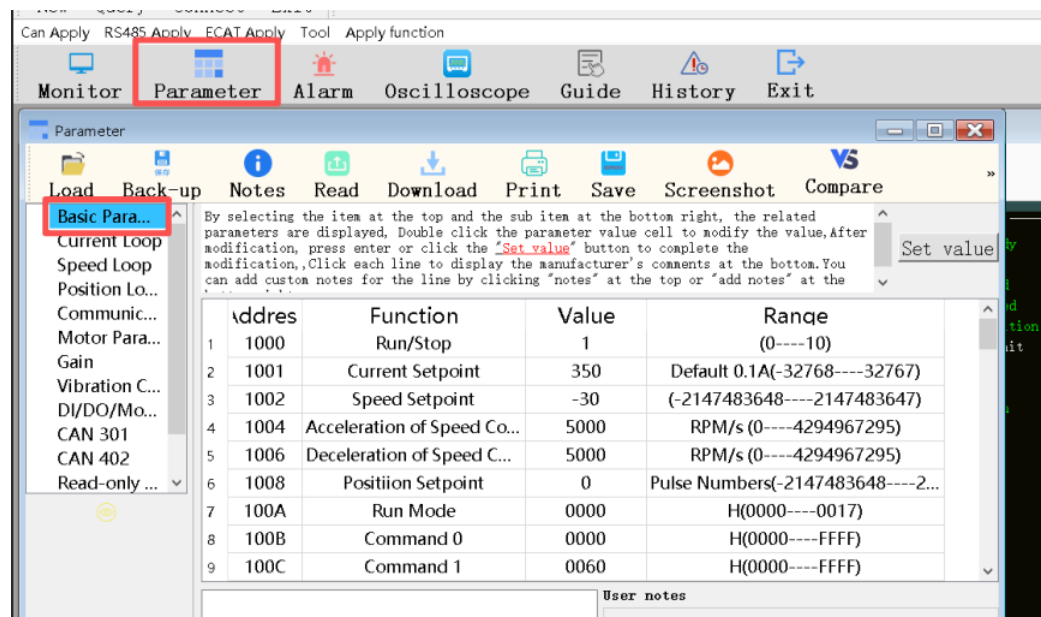
## 3.2 Steering motor testing

Step 1

-> Parameter

-> Basic Parameter

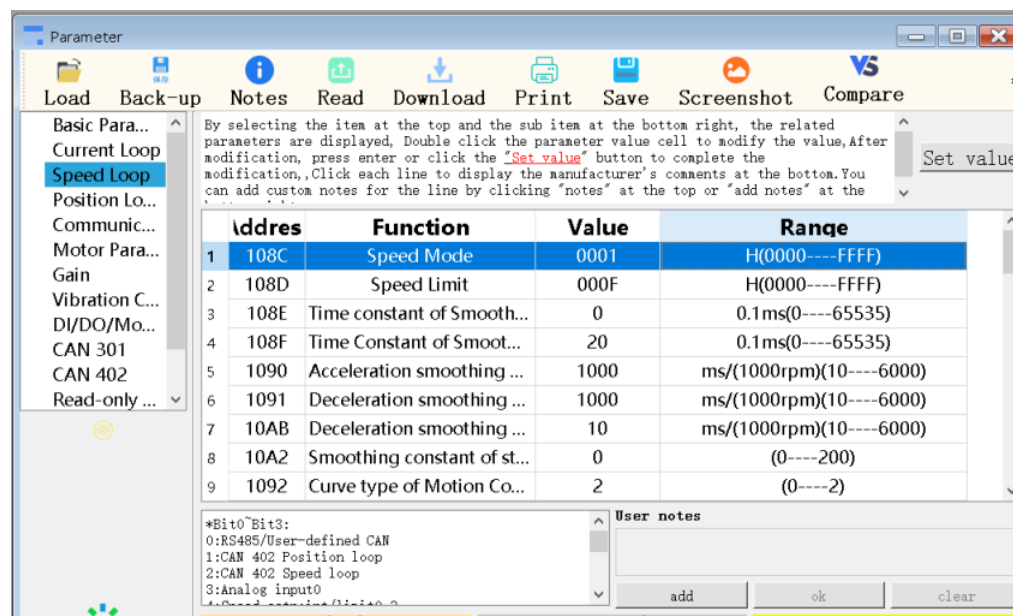
-> set            1000      Run/Stop 1  
                      100A      Run Mode      0000



Step 2

-> Speed Loop

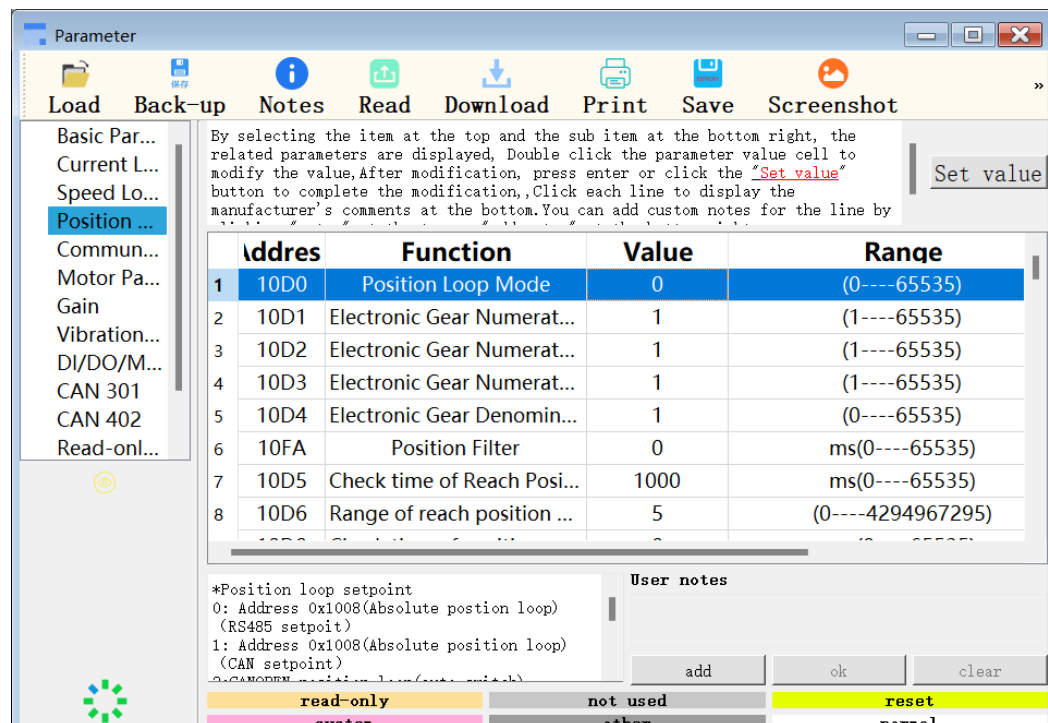
-> set            108C      Speed Mode      0001



## Step 3

-&gt; Position Loop

-&gt; set      10D0      Position Loop Mode      0



## Step 4

-&gt; On enable

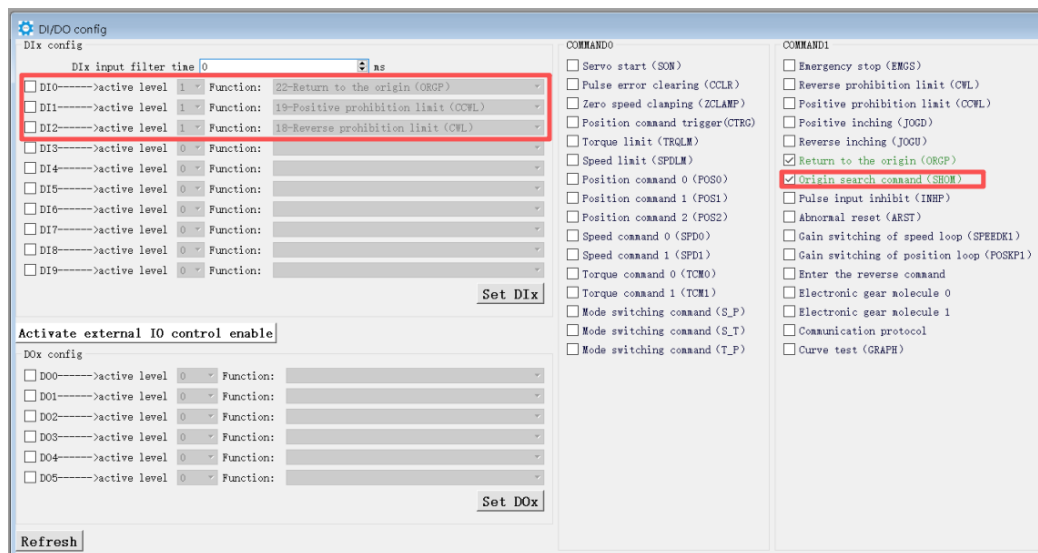


## Step 5

-&gt; DI/DO

-&gt; click "Origin search command(SHOM)"

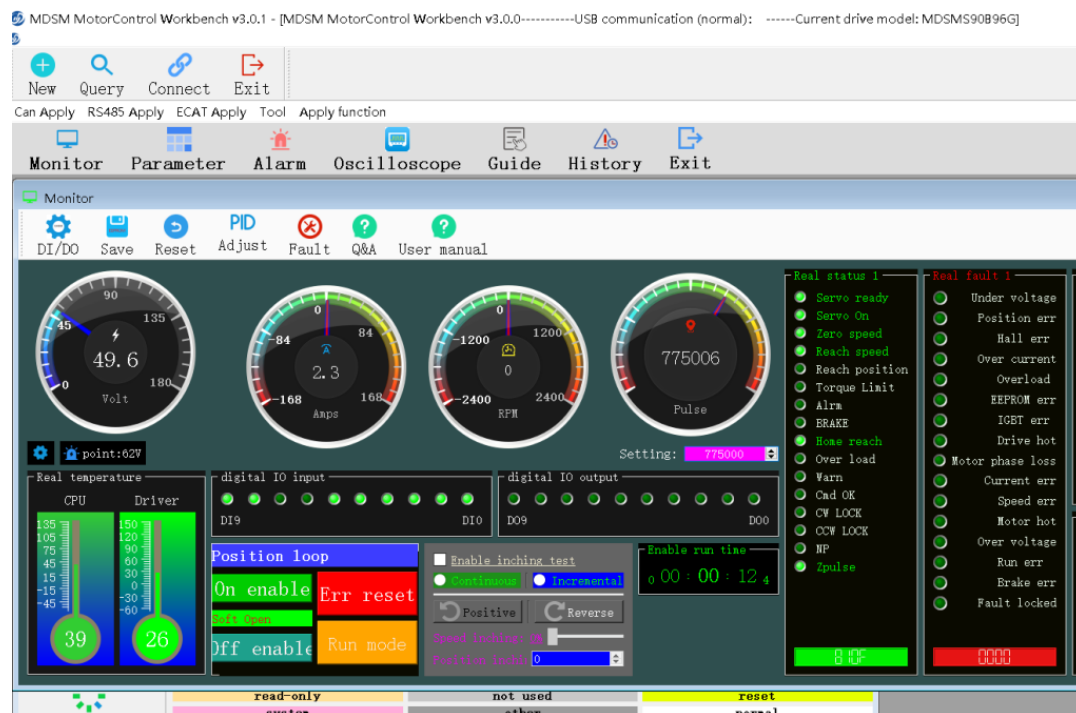
The steering motor begins to find the origin until the positive prohibition limit(CCWL) is on, that is, the forward limit signal is triggered, then the motor stops rotating.



## Step 6

-&gt; Enter the number of pulses corresponding to the position in the setting

For example: 775000 (90°), -775000 (-90°)



If the motor runs normally ,the test is finished.

## 4. CANopen Usage Routine

### 4.1 Traction motor control

Step 1

-> P02 Basic control

-> set            P02.01        2

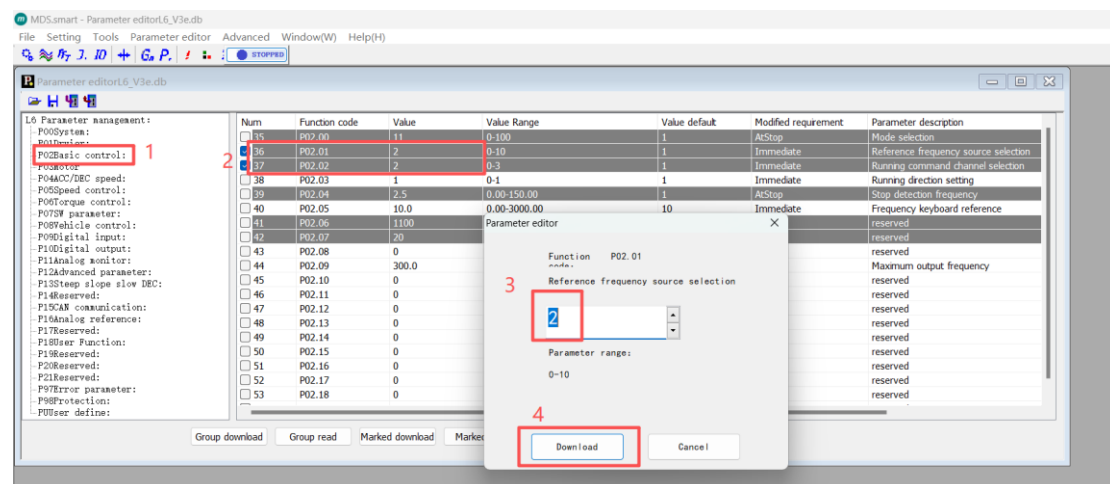
                  P02.02        2

Value define:0:Keyboard given

                  1:Analog value given

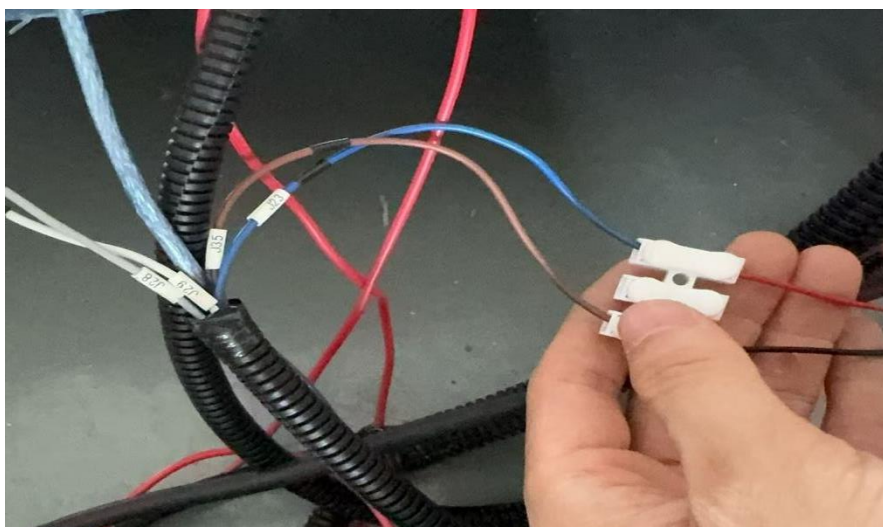
                  2:Communication given

-> Power off and restart



Step 2

->Connect J35 and J23 to CAN L and CAN H of the CAN tool respectively.

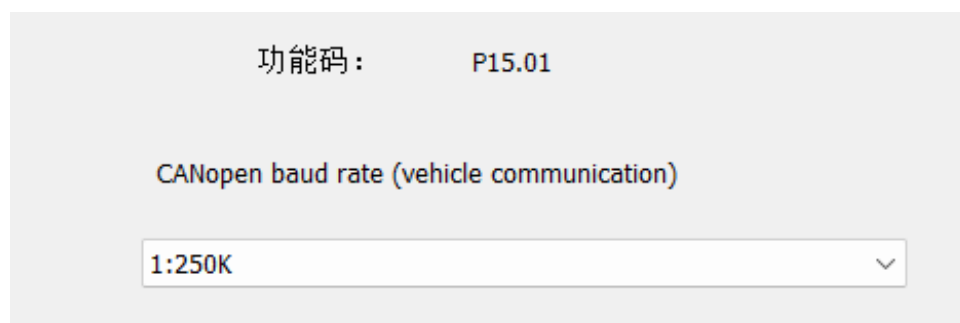
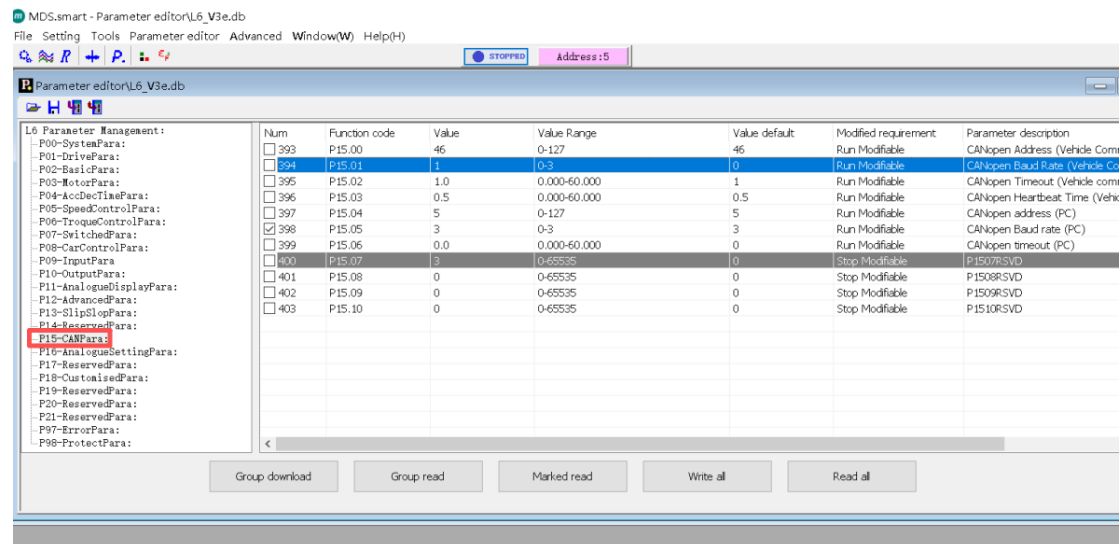


## Step 3

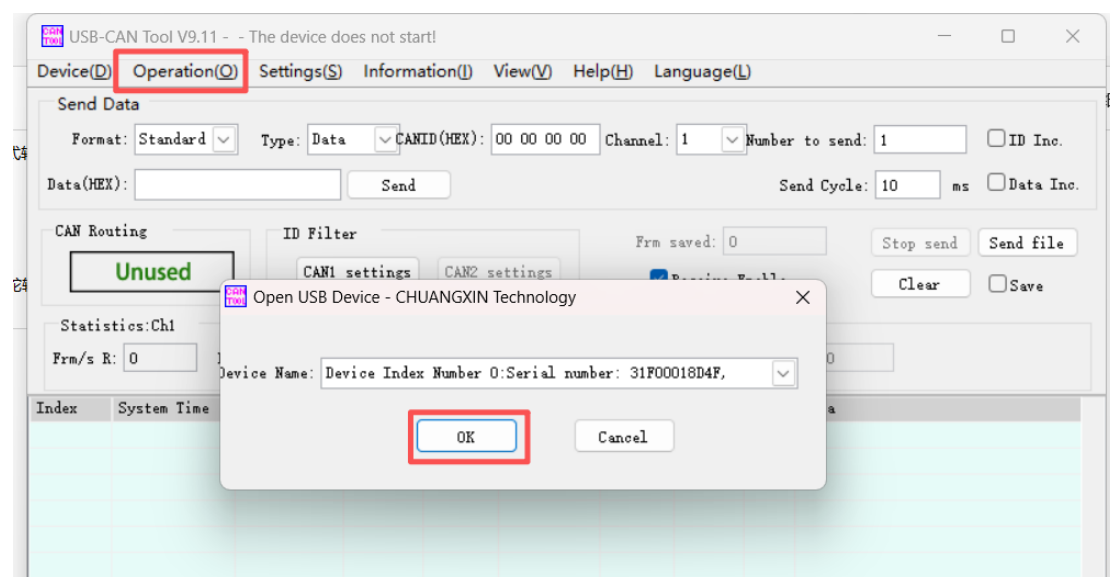
-&gt; P15 CAN communication

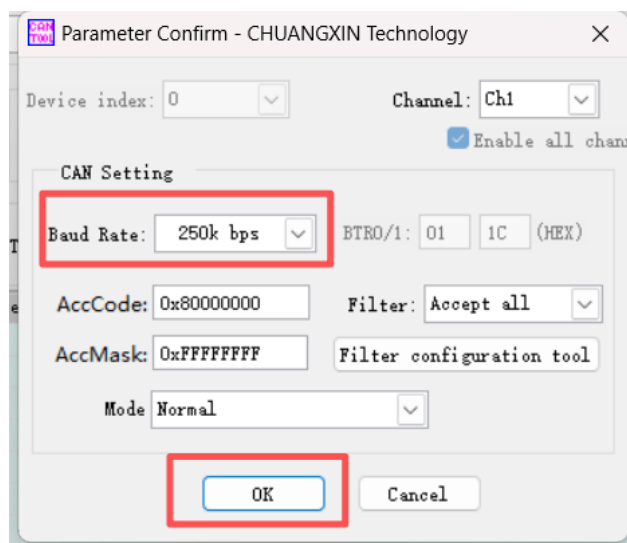
P15.01 is CAN communication baudrate

P15.07 is CAN node ID



-&gt; Open the USB CAN Tool and connect





## Step 4

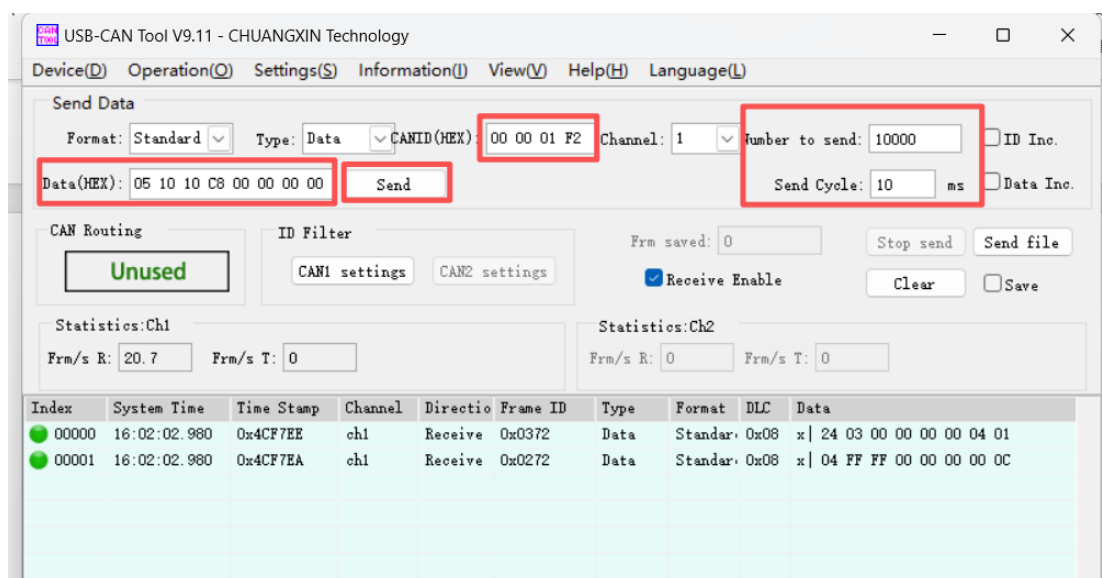
-> set CAN frame ID(HEX) 0x1F2

-> send the command

|     |                         |                  |
|-----|-------------------------|------------------|
| 1F2 | 05 10 10 C8 00 00 00 00 | Forward 200RPM   |
| 1F2 | 06 10 10 E8 03 00 00 00 | Backward 1000RPM |

06 is reverse (05 is forward)

C8 00 is 200RPM

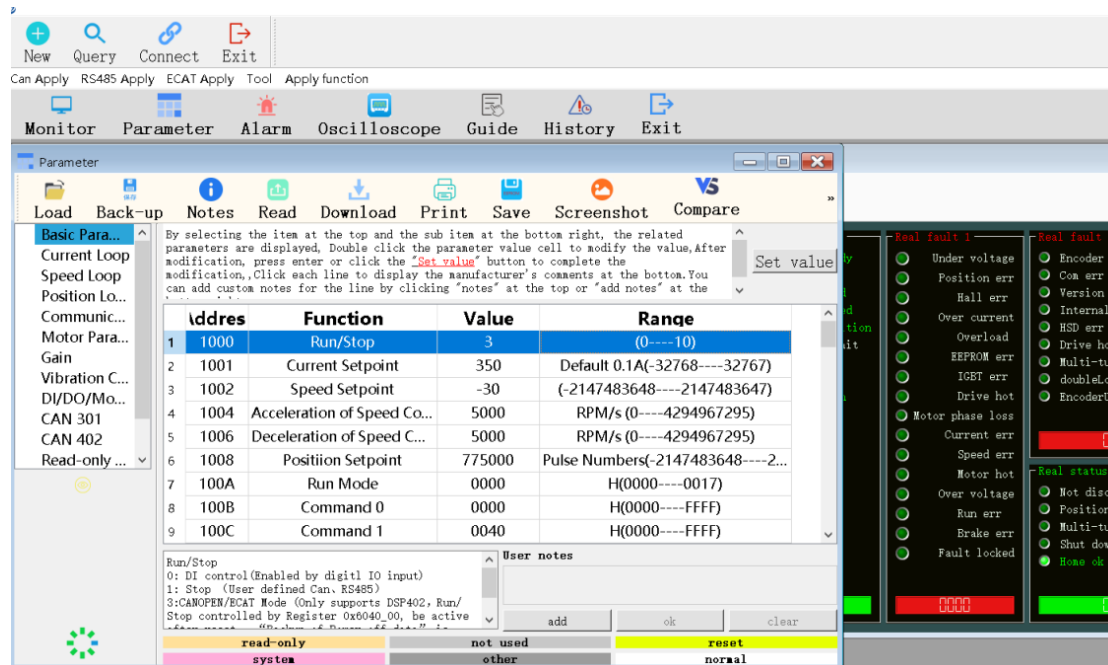


If the motor runs normally ,this way of the test is finished.

## 4.2 Steering motor control

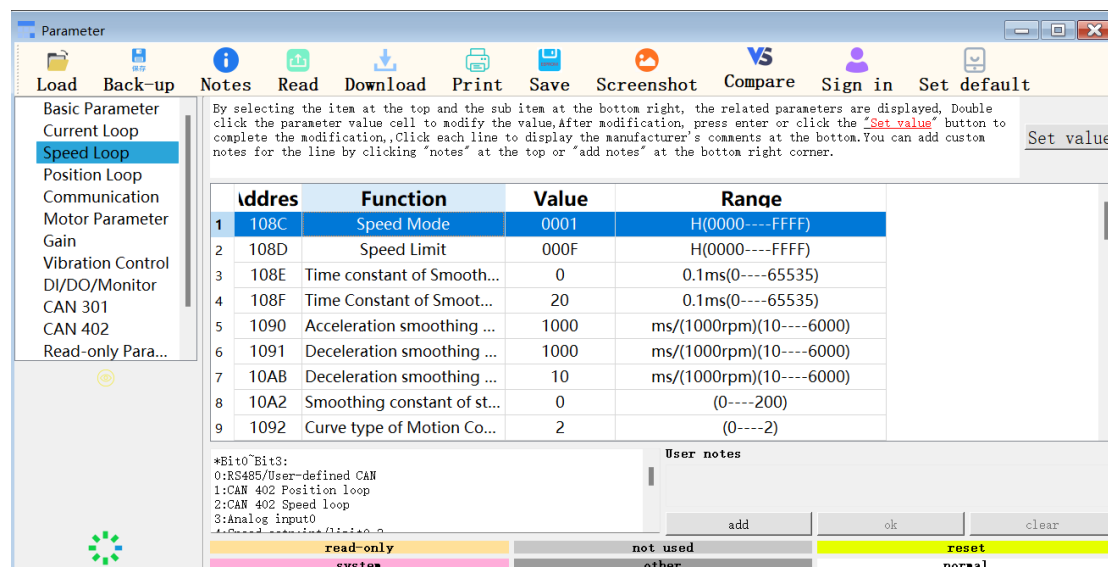
-> Basic Parameter

-> set            1000        Run/Stop 3



-> Speed Loop

-> set            108C        Speed Mode        0001



-> Position Loop

-> set

10D0        Position Loop Mode        2

10EA        Find Home                    0000

Parameter

Load Back-up Notes Read Download Print Save Screenshot Compare Sign in Set default

Basic Parameter  
Current Loop  
Speed Loop  
**Position Loop**  
Communication  
Motor Parameter  
Gain  
Vibration Control  
DI/DO/Monitor  
CAN 301  
CAN 402  
Read-only Para...

By selecting the item at the top and the sub item at the bottom right, the related parameters are displayed. Double click the parameter value cell to modify the value. After modification, press enter or click the "Set value" button to complete the modification. Click each line to display the manufacturer's comments at the bottom. You can add custom notes for the line by clicking "notes" at the top or "add notes" at the bottom right corner.

Set value

| Address | Function                     | Value | Range             |
|---------|------------------------------|-------|-------------------|
| 1 10D0  | Position Loop Mode           | 2     | (0----65535)      |
| 2 10D1  | Electronic Gear Numerat...   | 1     | (1----65535)      |
| 3 10D2  | Electronic Gear Numerat...   | 1     | (1----65535)      |
| 4 10D3  | Electronic Gear Numerat...   | 1     | (1----65535)      |
| 5 10D4  | Electronic Gear Denomin...   | 1     | (0----65535)      |
| 6 10FA  | Position Filter              | 0     | ms(0----65535)    |
| 7 10D5  | Check time of Reach Posi...  | 1000  | ms(0----65535)    |
| 8 10D6  | Range of reach position ...  | 5     | (0----4294967295) |
| 9 10D8  | Check time of position er... | 0     | ms(0----65535)    |

\*Position loop setpoint  
0: Address 0x1008(Absolute position loop) (RS485 setpoint)  
1: Address 0x1008(Absolute position loop) (CAN setpoint)  
2: CANOPEN position loop(auto-switch)  
3: Direction\*Pulse (Incremental position loop, valid after ...)

User notes

add ok clear

read-only not used reset  
system other normal

Parameter

Load Back-up Notes Read Download Print Save Screenshot Compare Sign in Set default

Basic Parameter  
Current Loop  
Speed Loop  
**Position Loop**  
Communication  
Motor Parameter  
Gain  
Vibration Control  
DI/DO/Monitor  
CAN 301  
CAN 402  
Read-only Para...

By selecting the item at the top and the sub item at the bottom right, the related parameters are displayed. Double click the parameter value cell to modify the value. After modification, press enter or click the "Set value" button to complete the modification. Click each line to display the manufacturer's comments at the bottom. You can add custom notes for the line by clicking "notes" at the top or "add notes" at the bottom right corner.

Set value

| Address | Function                     | Value | Range                       |
|---------|------------------------------|-------|-----------------------------|
| 16 10E0 | Motor Internal Position C... | 0     | (-2147483648----2147483647) |
| 17 10E2 | Motor Internal Position C... | 0     | (-2147483648----2147483647) |
| 18 10E4 | Motor Internal Position C... | 0     | (-2147483648----2147483647) |
| 19 10E6 | Motor Internal Position C... | 0     | (-2147483648----2147483647) |
| 20 10E8 | Motor Internal Position C... | 0     | (-2147483648----2147483647) |
| 21 10EA | Find Home                    | 0000  | H(0000----FFFF)             |
| 22 10EB | Return to Home - Speed ...   | 1000  | rpm or 0.1rpm(0----32767)   |
| 23 10EC | Return to Home - Speed ...   | 100   | rpm or 0.1rpm(0----32767)   |
| 24 10ED | Return to Home Mode (...)    | 2     | (0----37)                   |

bits 11: Compound mode:  
0: Return to Home, by CANOPEN mode  
1: Return to Home when power-up  
2: Return to Home by command 1 bit (Valid in rising edge)  
3: Reserved

User notes

add ok clear

read-only not used reset  
system other normal

-> Communication

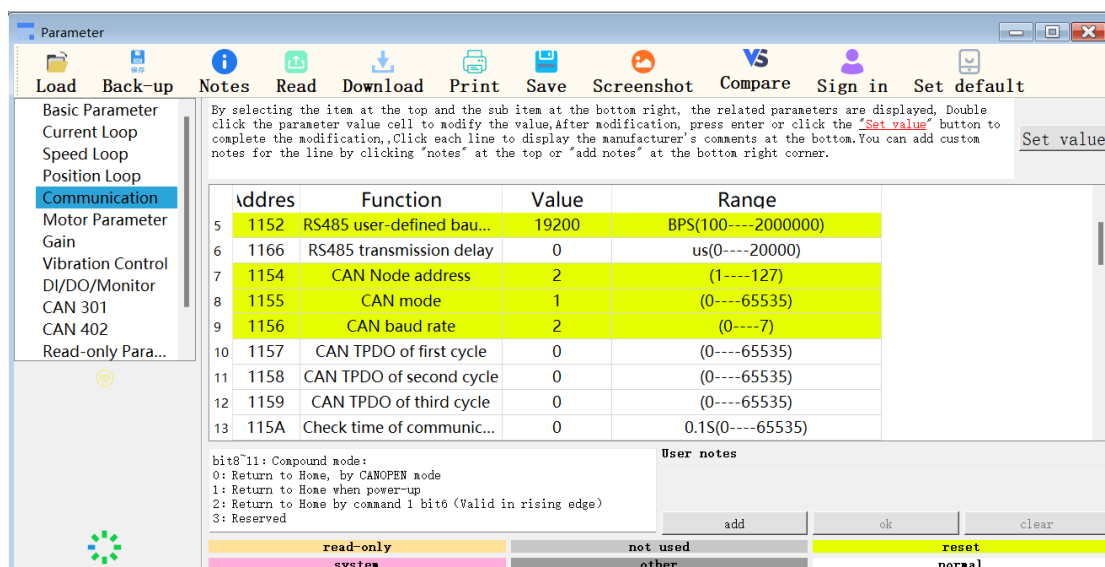
-> set

1154CAN Node address 2

1155CAN mode 1

1156CAN baud rate 2

-> save



-> Open

-> send the command one by one

| Steering Motor CAN Message |                         |                                                                                            |
|----------------------------|-------------------------|--------------------------------------------------------------------------------------------|
| CANID                      | Command                 | Exegesis                                                                                   |
| 000                        | 01 02                   | Enable mode 2                                                                              |
| 602                        | 2F 60 60 00 06 00 00 00 | Origin return mode                                                                         |
|                            | 2B 40 60 00 0F 00 00 00 | Servo waiting for enable → Servo running                                                   |
|                            | 2B 40 60 00 1F 00 00 00 | Initiate zero-positioning (wait for motor to stop rotating before sending further command) |
|                            | 2F 60 60 00 01 00 00 00 | Set to Position Mode                                                                       |
|                            | 23 7A 60 00 00 00 00 00 | Set position zero                                                                          |
|                            | 23 81 60 00 E8 03 00 00 | Set the speed to 1000 rpm                                                                  |
|                            | 2B 40 60 00 2F 00 00 00 | Trigger motor operation                                                                    |
|                            | 2B 40 60 00 3F 00 00 00 |                                                                                            |

Another cycle position mode command example:

| Steering Motor CAN Message |         |               |
|----------------------------|---------|---------------|
| CANID                      | Command | Exegesis      |
| 000                        | 01 02   | Enable node 2 |

|     |                         |                                                                                        |
|-----|-------------------------|----------------------------------------------------------------------------------------|
| 602 | 2F 60 60 00 06 00 00 00 | Home Return Mode                                                                       |
|     | 2B 40 60 00 0F 00 00 00 | Servo wait enable → Servo run                                                          |
|     | 2B 40 60 00 1F 00 00 00 | Initiate zero search (wait for motor to stop rotating before sending further commands) |
|     | 2F 60 60 00 08 00 00 00 | Set to cyclic position mode                                                            |
|     | 23 7A 60 00 00 00 00 00 | Move to zero point                                                                     |
|     | 23 7A 60 00 58 D3 0B 00 | Move to 90°                                                                            |
|     | 23 7A 60 00 A8 2C F4 FF | Move to -90°                                                                           |

USB-CAN Tool V9.11 - CANalyst-II - SN:Serial number: 31F0001B299, firmware version number: V3.41 - CHUANGXI...

Device(D) Operation(O) Settings(S) Information(I) View(V) Help(H) Language(L)

**Send Data**

Format: Standard Type: Data CANID(HEX): 00 00 00 00 Channel: 1 Number to send: 1 ☐ ID Inc.

Data(HEX): 01 02  Send Cycle: 10 ms ☐ Data Inc.

**CAN Routing**    Frm saved: 0   ☒ Receive Enable  ☐ Save

**Statistics:Ch1** Frm/s R: 14.1 Frm/s T: 0 **Statistics:Ch2** Frm/s R: 0 Frm/s T: 0

| Index | System Time  | Time Stamp | Channel | Direction | Frame ID | Type | Format   | DLC  | Data                     |
|-------|--------------|------------|---------|-----------|----------|------|----------|------|--------------------------|
| 00000 | 19:56:03.037 | 0xAC1585   | ch1     | Receive   | 0x0702   | Data | Standard | 0x01 | x   05                   |
| 00001 | 19:56:02.946 | 0xAC1137   | ch1     | Receive   | 0x0701   | Data | Standard | 0x01 | x   7F                   |
| 00002 | 19:55:32.973 | -          | ch1     | Send      | 0x0000   | Data | Standard | 0x02 | x   01 02                |
| 00003 | 19:55:32.976 | 0xA780C6   | ch1     | Receive   | 0x0282   | Data | Standard | 0x04 | x   01 00 00 00          |
| 00004 | 19:56:03.276 | 0xAC1EC5   | ch1     | Receive   | 0x0182   | Data | Standard | 0x07 | x   01 00 00 00 40 02 06 |

USB-CAN Tool V9.11 - CANalyst-II - SN:Serial number: 31F0001B299, firmware version number: V3.41 - CHUANGXI...

Device(D) Operation(O) Settings(S) Information(I) View(V) Help(H) Language(L)

**Send Data**

Format: Standard Type: Data CANID(HEX): 00 00 06 02 Channel: 1 Number to send: 1 ☐ ID Inc.

Data(HEX): 2B 40 60 00 1F 00 00 00  Send Cycle: 10 ms ☐ Data Inc.

**CAN Routing**    Frm saved: 0   ☒ Receive Enable  ☐ Save

**Statistics:Ch1** Frm/s R: 233.9 Frm/s T: 0 **Statistics:Ch2** Frm/s R: 0 Frm/s T: 0

| Index | System Time  | Time Stamp | Channel | Direction | Frame ID | Type | Format   | DLC  | Data                        |
|-------|--------------|------------|---------|-----------|----------|------|----------|------|-----------------------------|
| 00000 | 19:57:44.047 | 0xBB796D   | ch1     | Receive   | 0x0702   | Data | Standard | 0x01 | x   05                      |
| 00001 | 19:57:43.927 | 0xBB753B   | ch1     | Receive   | 0x0701   | Data | Standard | 0x01 | x   7F                      |
| 00002 | 19:55:32.973 | -          | ch1     | Send      | 0x0000   | Data | Standard | 0x02 | x   01 02                   |
| 00003 | 19:57:43.297 | 0xBB5CE9   | ch1     | Receive   | 0x0282   | Data | Standard | 0x04 | x   7C CC 07 00             |
| 00004 | 19:57:44.107 | 0xBB7C67   | ch1     | Receive   | 0x0182   | Data | Standard | 0x07 | x   7C CC 07 00 37 16 06    |
| 00005 | 19:57:33.947 | 0xB9EB61   | ch1     | Receive   | 0x0582   | Data | Standard | 0x08 | x   60 40 60 00 00 00 00 00 |
| 00006 | 19:57:33.818 | -          | ch1     | Send      | 0x0602   | Data | Standard | 0x08 | x   2B 40 60 00 1F 00 00 00 |

The test is finished