

Drive Wheel

Use and Maintenance Instruction

Manual



DR DRIVE Co., Ltd.

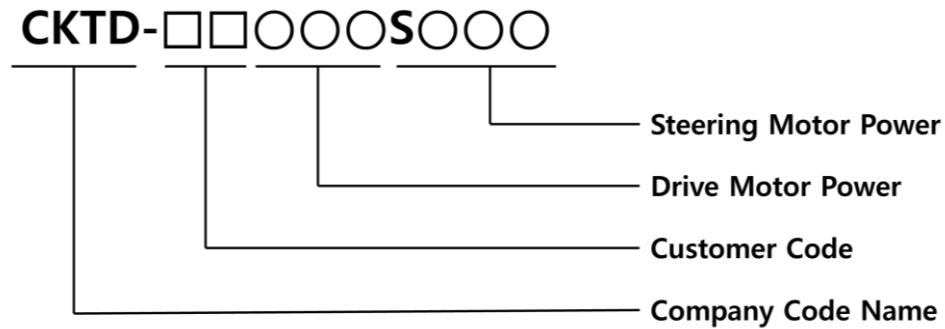
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1. Dimensions and Parameters

1.1 Dimension parameters

(1) Product model and specification definition



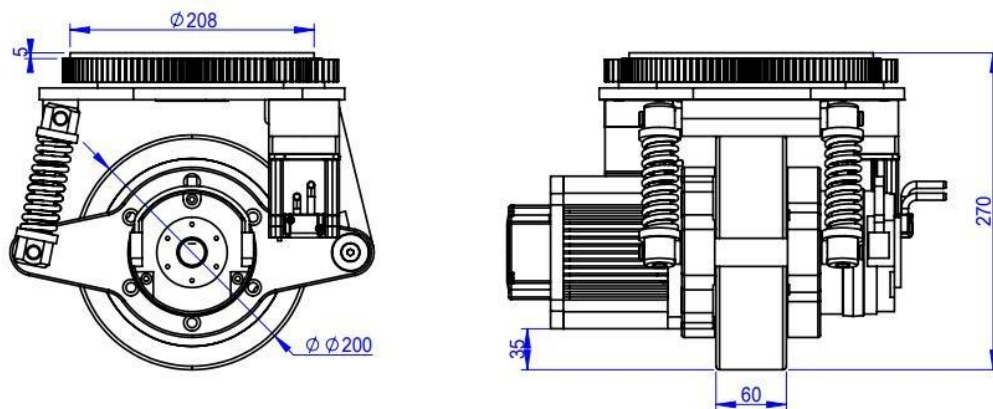
Code description:

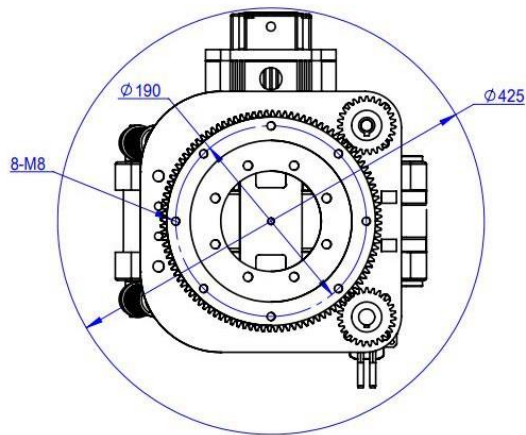
Company Code Name: CKTD

Drive Motor Power: 750, 1K0, 1K5, where 750 represents the drive motor power 750W, 1K0 represents the drive motor power 1kW, and 1K5 represents the drive motor 1.5kW.

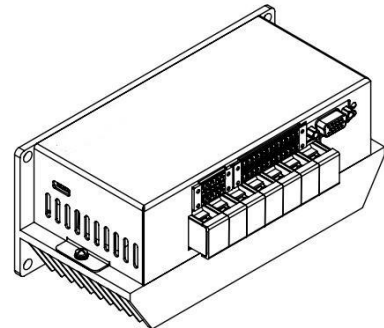
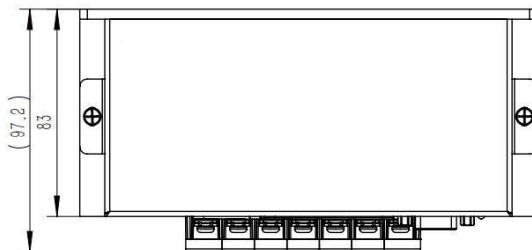
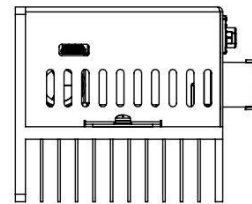
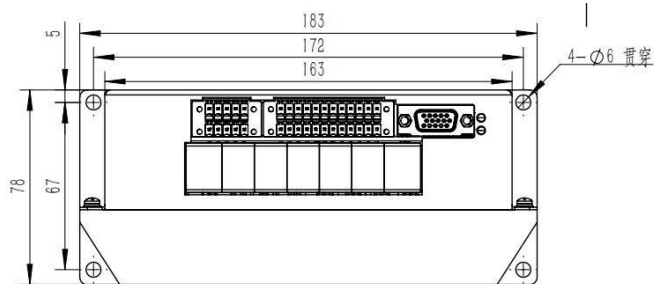
Steering Motor Power: S400, S1K5, where 400 represents the steering motor power 400W, and 1K5 represents the steering motor power 1.5kW

(2) Appearance and dimensions of DRID-DS1K5S400:

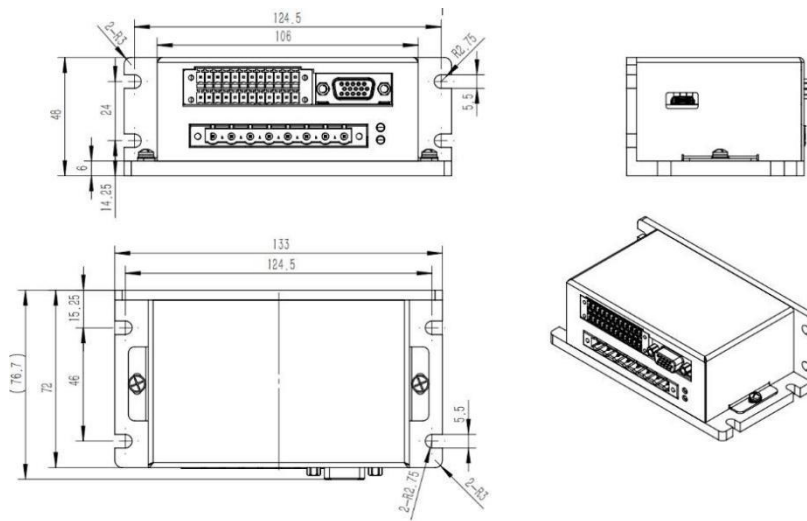




Walking drive: MDSM40C96G appearance and dimensions



Steering driver: MDSM15B60G shape and dimensions

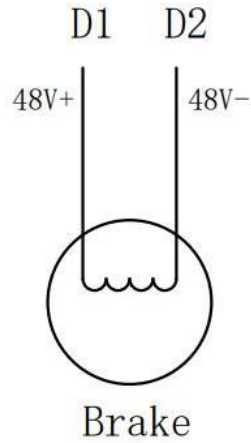


1.2 Motor parameters

Walking motor parameters ,driver parameters		
1	Motor type	Servo
2	Power (W)	1500
3	Rated voltage (V)	48
4	Rated speed (rpm)	3000
5	Rated current (A)	39
6	Gear ratio	27.48
7	Encode (ppr)	2500
8	Wheel diameter (mm)	200
9	Rated torque (Nm)	4.77
Steering motor, steering parameters		
10	Motor type	Servo
11	Power (W)	400
12	Rated voltage (V)	48
13	Rated speed (rpm)	3000
14	Rated current (A)	12
15	Gearbox reduction ratio	35
16	Master-slave gear ratio	4
17	Encode (ppr)	2500
18	Rated torque (Nm)	1.27
19	Maximum steering angle(°)	130

2. Electrical section description

2.1 Walking motor and drive

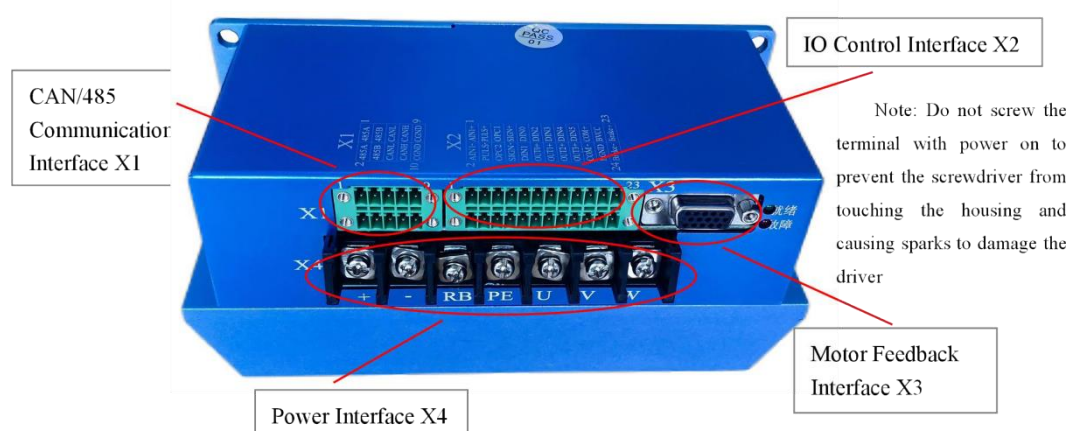


Electrical schematic diagram of the brake

Walking motor interface information

Power line sequence		
Pin	Color	Function
1	GRE	PE
2	RED	U
3	BLU	V
4	YEL	W
Encoder wire sequence		
Pin	Color	Function
1	White	A
2	White-Black	A -
3	Green	B
4	Green-Black	B -
5	Yellow	Z
6	Yellow-Black	Z -
7	Brown-Black	U
8	Orange-Black	V
9	Gray-Black	W
10	Black	GND
11	Red	+5V
12	Shield	FG

Walking on the drive interface information



MDSM40C96G X1 Communication interface definition

Num	Name	Definition	Harness selection	Terminal model	Crimping tool
1	485A	485 B us (without 120Ω resister)	It is recommended to use a twisted pair connection with shielding, Cross-sectional area of copper core wire:0.5 mm ²	E0506 tube type pre-insulated terminal	HSC8 6-4 Euro type terminal special crimping pliers
2	485A				
3	485B				
4	485B				
5	CANL	CAN B us (without 120Ω resister) An external termination resistor must be added			
6	CANL				
7	CANH				
8	CANH				
9	CGND	CAN bus and 485 bus ground, it is recommended to connect to ground			
10	CGND				
Notes		Maximum terminal torque : 0.2N·m			

MDSM40C96G X 2 Communication interface definition

Crimping tool	Terminal model	Harness selection	Signal definition	Signal name	Pin number
HSC8 6-4 special pressing clamp for European terminal	E0506 tube-type pre-insulated terminal	It is recommended to use a wire harness with tin copper woven net with a cross-sectional area of 0.5 mm ²	The analog input impedance is 10K, and the input voltage range: -10V~10V	AIN0+	1
				AIN0-	2
			Pulse signal, with an operating voltage of 5V. If a higher voltage is required for an external series resistance, refer to part 3-4	PULS+	3
				PULS-	4
			Refer to the ③ diagram in Figure 3-4 for pulse signal input, compatible with 12V	OPC1	5
			Refer to the ③ diagram in Figure 3-4 for pulse signal input, compatible with 12V	OPC2	6
			Direction signal, with an operating voltage of 5V. If a higher voltage is required for an external series resistance, refer to part 3-4	SIGN+	7
				SIGN-	8
			Digital input channel 0, 1, 2, compatible voltage 12V~24V.	DIN0	9
				DIN1	10
				DIN2	11
			Digital output channel 0, output type: collector open, voltage 30V / 300 mA	OUT0+	12
			Digital input channel 3, compatible voltage from 12 V to 24 V.	DIN3	13
			Digital output channel 1, Output type: collector open circuit, withstand voltage 30V / 300 mA	OUT1+	14
			Digital input channel 4, compatible voltage from 12 V to 24 V.	DIN4	15
			Digital output channel 2, Output type: collector open circuit, withstand voltage 30V / 300 mA	OUT2+	16
			Digital input channel 5, compatible voltage from 12 V to 24 V.	DIN5	17
			Digital output channel 3, Output type: open collector electrode, withstand voltage 30V / 300 mA	OUT3+	18
			The digital input is the coanodic port, and the photocoupling input is co-positive	COM+	19
			Digital output common port, for the optical coupling output common port	COM-	20
			Lock power supply positive electrode, the maximum voltage is 60V.	BVCC	21
			Lock power supply ground	BGND	22
			Connect the lock 2 lines	Brake+	23
				Brake-	24
Maximum torque of the terminal: 0.2 Nm					

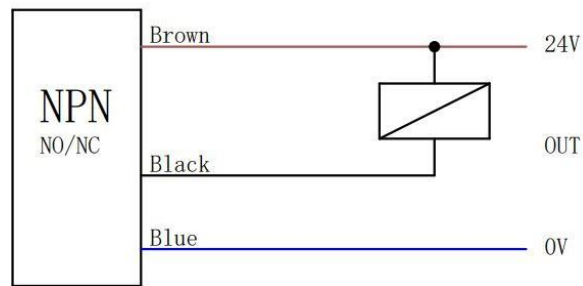
The X3 feedback definition of the MDSM40C96G

Feedback is the G-series feedback terminal X 3 interface definition and wire harness selection				
Needle foot serial number	Signal	Needle foot serial number	Signal	Wire harness selection
1	B+	9	V-	It is recommended to use a wire harness with tin copper woven net with a cross-sectional area of 0.15 mm ²
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. The single-end TTL feedback is connected to signals A +, B +, Z +, U +, V +, W +, + 5 +, GND, and the pin number shall correspond to the pin number marked on the supporting head.				

MDSM40C96G X4 Power interface definition

Order number	Name	Definition	High-temperature wear-resistant multiple strands of copper core cross-sectional area
1	+	Input power supply positive	6~10mm ²
2	-	Input power negative	6~10mm ²
3	RB	Discharge resistance (resistance at the other end +)	6mm ²
4	PE	Shell shielding ground	6mm ²
5	U	Motor U phase	6~10mm ²
6	V	Motor V phase	6~10mm ²
7	W	Motor W phase	6~10mm ²
Matters need attention		① Maximum terminal torque: 1.2 Nm ② It is recommended for pre-insulated terminals	

2.2 Steering motor and drive



Electrical schematic diagram of the NPN proximity switch

Steering motor interface information

Power line sequence		
Pin	Color	Function
1	YEL -GRE	GND
2	RED	U
3	BLU	V
4	YEL	W
Encoder wire sequence		
Pin	Color	Function
1	Shield	FG
2	Red	5V
3	Black	0V
4	Green	A
5	Yellow-Black	Z -
6	Brown	U
7	Yellow	Z
8	Brown-Black	U -
9	Gray	B
10	White	V
11	Blue	W
12	Blue-Black	W -
13	Gray-Black	B -
14	Green-Black	A -
15	White-Black	V -



The X1 interface definition of the MDSM15B60G

Definition of IO control interface X1 and selection of line diameter, terminal and line pressing tool					
Pin number	Signal name	Signal definition	Harness selection	Terminal model	Crimping tool
1	CANL	CAN bus (no 120 Ω resistance) must be applied	A twisted-pair connection with shielding is recommended It is recommended to use a wire harness with tin copper woven net with a cross-sectional area of 0.5 mm ²	E0506 tube-type pre-insulated terminal	HSC8 6-4 special pressing clamp for European terminal
2	485A	485 bus (no 120 Ω resistance)			
3	CANH	CAN bus (no 120 Ω resistance) must be applied			
4	485B	485 bus (no 120 Ω resistance)			
5	CGND	CAN bus and 485 bus ground, recommended to the ground			
6	CGND	CAN bus and 485 bus ground, recommended to the ground			
7	AIN0+	The simulated input impedance is 10K,			
8	AIN0-	Input voltage range: -10V~10V.			
9	PULS+	Pulse signal, with an operating voltage of 5V. If a higher voltage is			
10	PULS-	required for an external series resistance, refer to part 3-4			
11	SIGN+	Direction signal, with an operating voltage of 5V. If a higher voltage			
12	SIGN-	is required for an external series resistance, refer to part 3-4			
13	DIN0	Digital input channel 0, compatible voltage from 12 V to 24 V.			

14	DIN3	Digital input channel 3, compatible voltage from 12 V to 24 V.			
15	DIN1	Digital input channel 1, compatible voltage from 12 V to 24 V.			
16	OUT0+	Digital output channel 0, output type: collector open, voltage 30V / 300 mA			
17	DIN2	Digital input channel 2, compatible voltage from 12 V to 24 V.			
18	OUT1+	Digital output channel 1, Output type: collector open circuit, withstand voltage 30V / 300 mA			
19	COM+	The digital input is the coanodic port, and the photocoupling input is co-positive			
20	COM-	Digital output common port, for the optical coupling output common port			
21	BVCC	Lock power supply positive electrode, the maximum voltage is 60V.			
22	BGND	Lock power supply ground			
23	Brake+	Connect the lock 2 lines			
24	Brake-				

MDSM15B60G X2 motor feedback interface definition

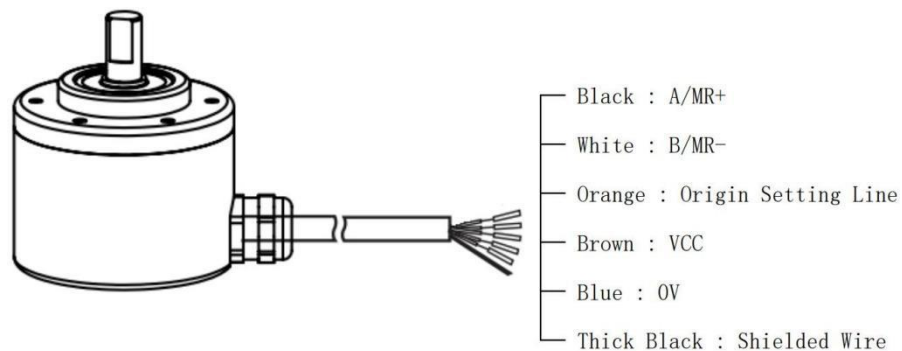
Feedback is the G series feedback terminal X2 interface definition and wire harness selection				
Needle foot serial number	Signal	Needle foot serial number	Signal	Wire harness selection
1	B+	9	V-	It is recommended to use a wire harness with tin copper woven net with a cross-sectional area of 0.15 mm ²
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. The single-end TTL feedback is connected to signals A +, B +, Z +, U +, V +, W +, + 5 +, GND, and the pin number shall correspond to the pin number marked on the supporting head.				

The MDSM15B60G X3 power interface definition

Order number	Name	Definition	High-temperature wear-resistant multiple strands of copper core cross-sectional area
1	P	Input power supply positive	2.5~4mm ²
2	GND	Input power negative	2.5~4mm ²
3	RB+	Leak resistance	1.5~4mm ²
4	RB-		1.5~4mm ²
5	PE	Shell shielding ground	1.5~4mm ²
6	U	Motor U phase	2.5~4mm ²
7	V	Motor V phase	2.5~4mm ²
8	W	Motor W phase	2.5~4mm ²
matters need attention		① Maximum terminal torque: 0.4 Nm ② LX-insulated 03C is recommended	

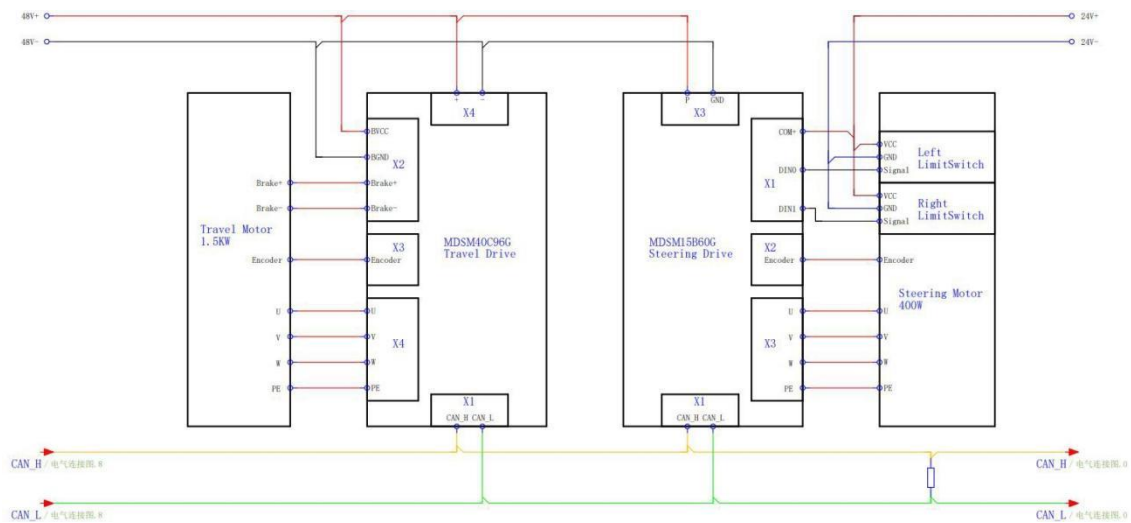
2.3 Absolute value encoder

Absolute value encoder pin



Absolute value encoder pin information diagram

2.4 Example of a rudder wheel electrical connection



3. Testing and Usage

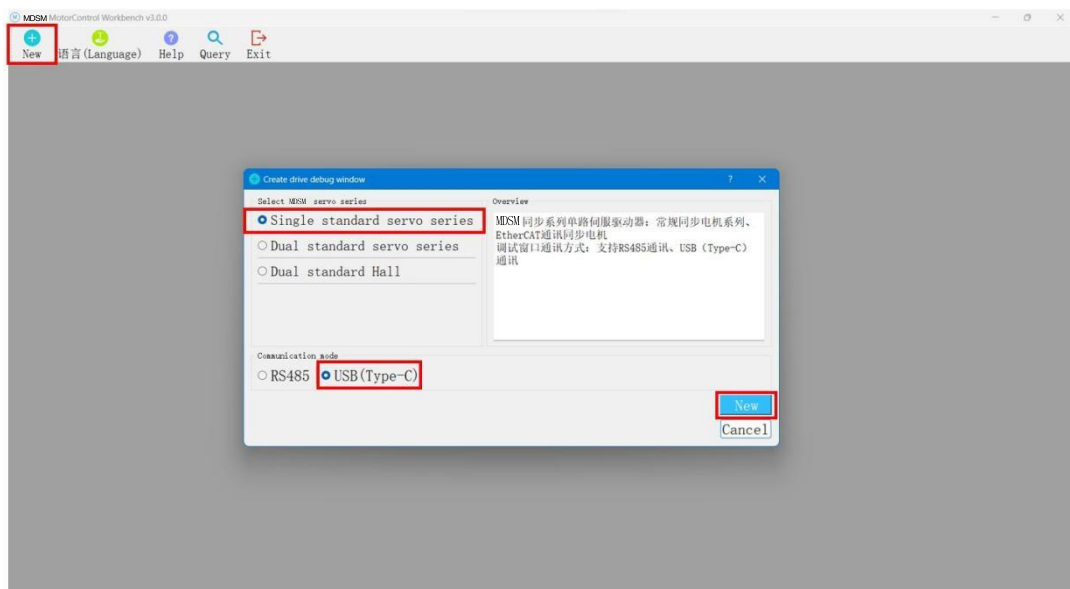
3.1 Walking motor test

Step 1

Connect the PC and drive with USB(Type-C). Then open the software.

Step 2

- > New
- > Create drive debug window
- > Single standard servo series
- > USB(Type-C)
- > New

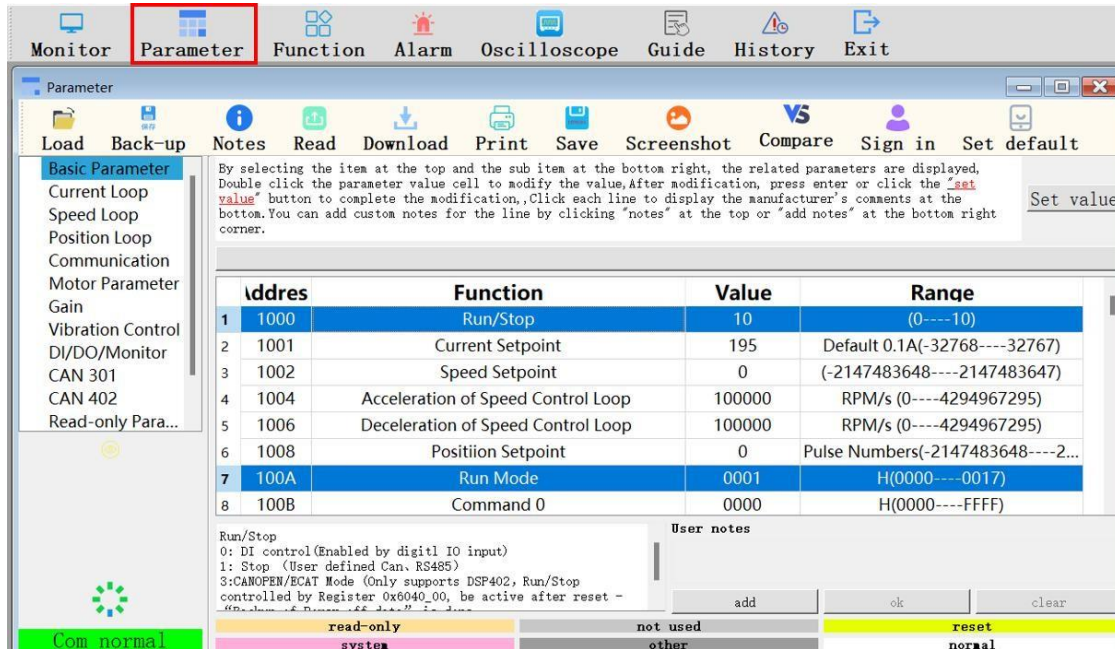


(If cannot connect properly, install the drive in the installation directory of the upper computer software.)

zadig(首次使用安装usb驱动).exe

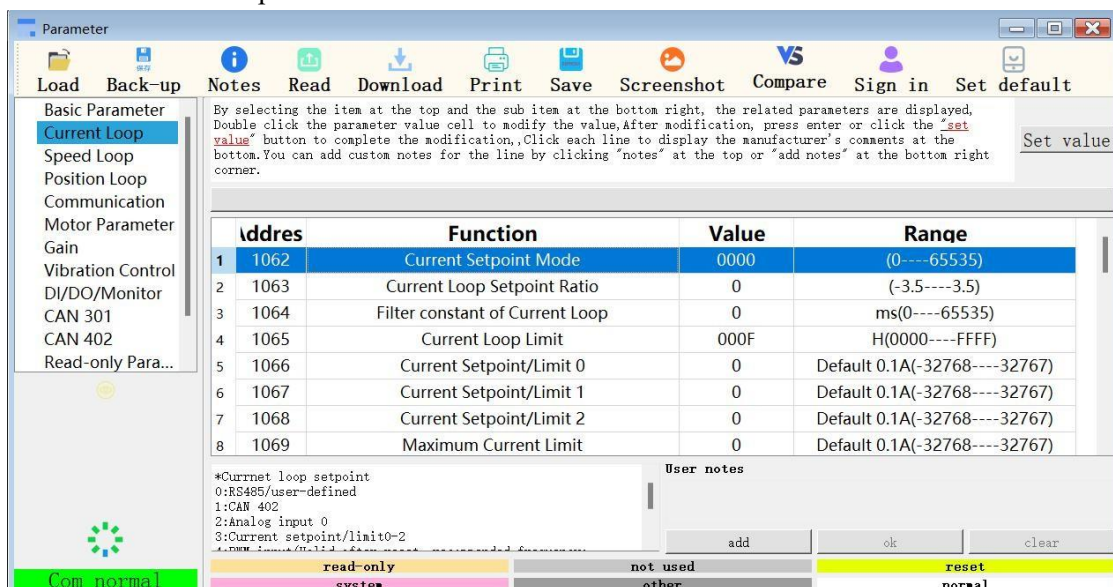
Step 3

-> set 1000 Run/Stop10
100A Run Mode 0001



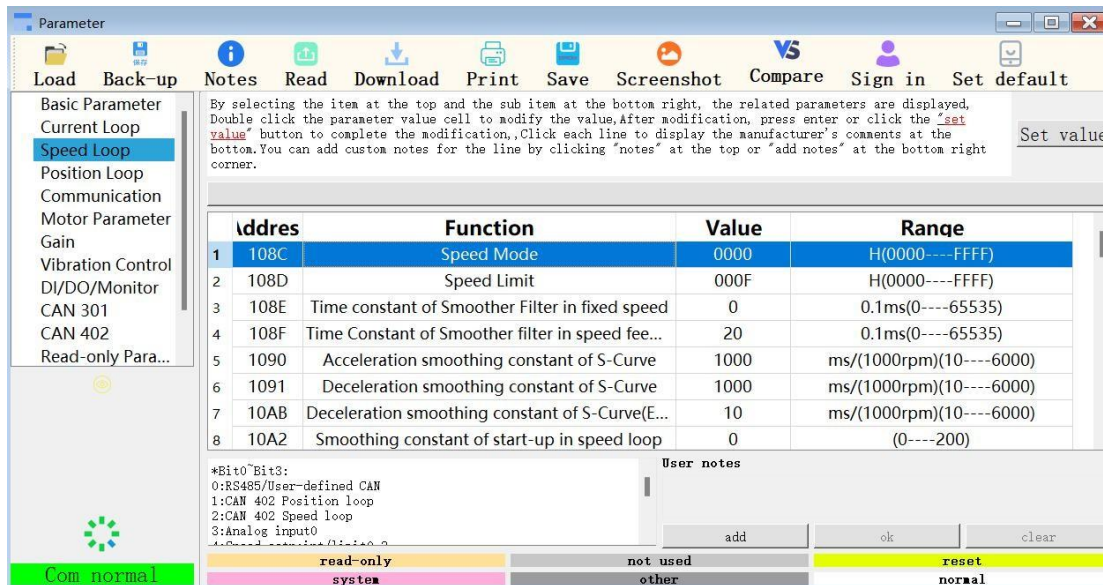
Step 4

-> Current Loop
-> set 1062 Current Setpoint Mode 0000



Step 5

-> Speed Loop
-> set 108C Speed Mode 0000



Step 6

-> On enable

-> Setting: input speed (such as:2000) enter



If the motor runs normally, the test is finished.

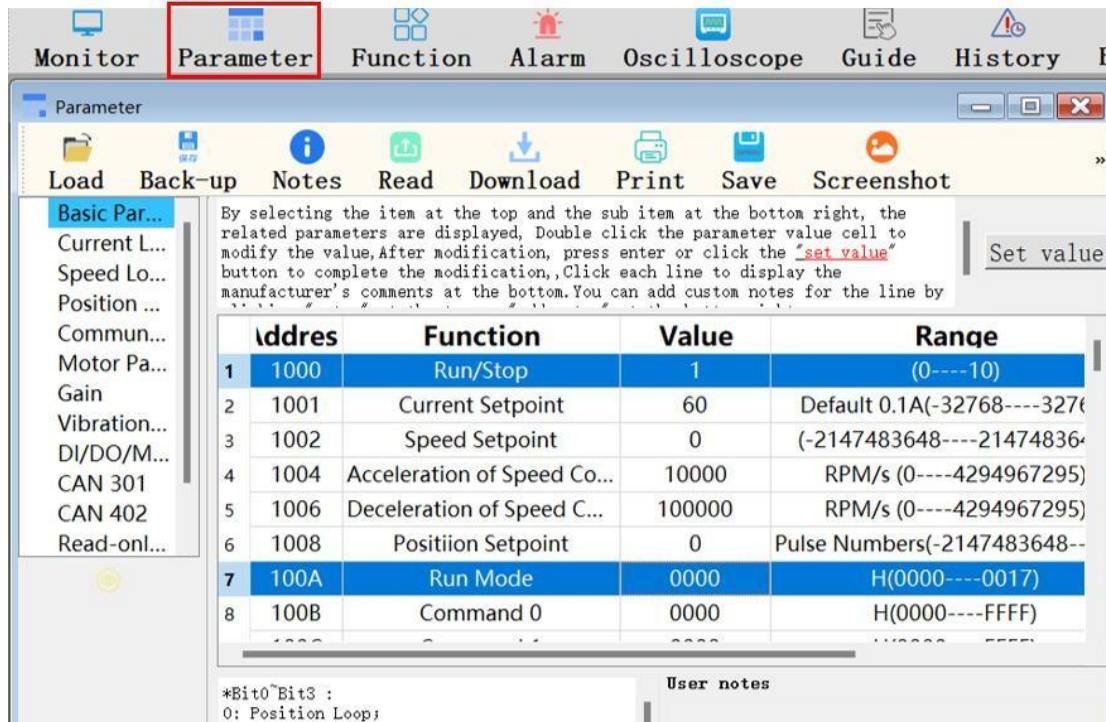
3.2 Steering motor test

Step 1

-> Parameter

-> Basic Parameter

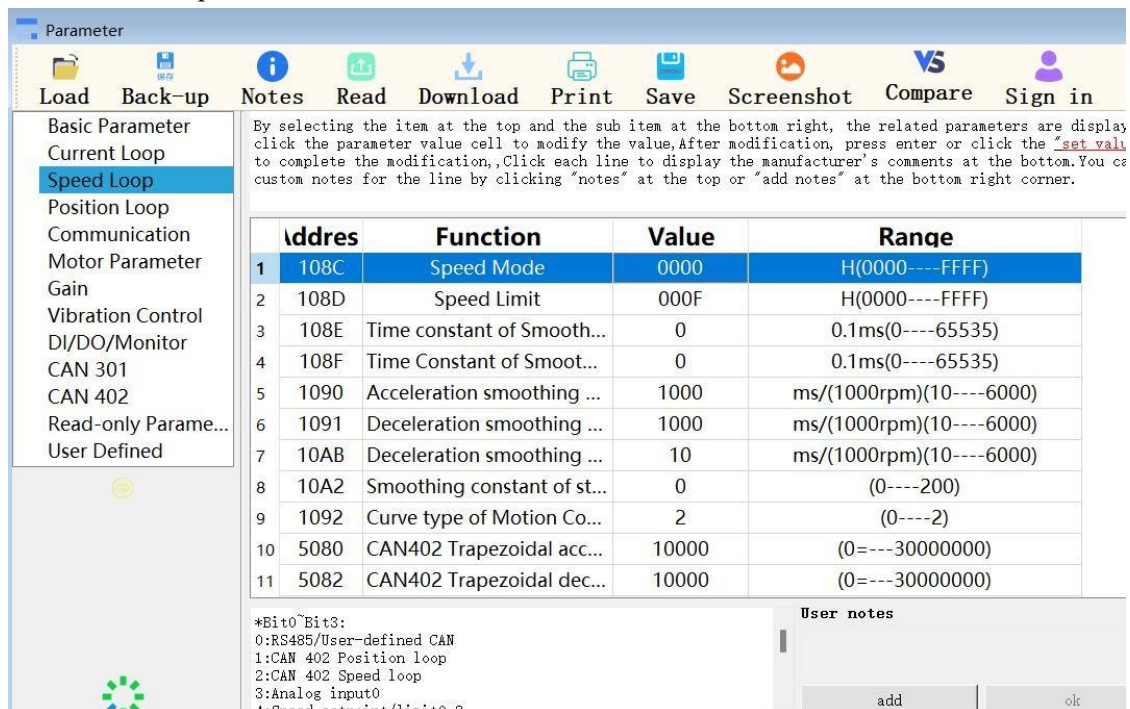
-> set 1000 Run/Stop1
 100A Run Mode 0000



Step 2

-> Speed Loop

-> set 108C Speed Mode 0000



Step 3

-> Position Loop

-> set 10D0 Position Loop Mode 0

Parameter

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

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

By selecting the item at the top and the sub item at the bottom right, the related parameters are displayed. click the parameter value cell to modify the value. After modification, press enter or click the "set_val" 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.

	Address	Function	Value	Range
1	10D0	Position Loop Mode	0	(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...	500	ms(0---65535)
8	10D6	Range of reach position ...	5	(0----4294967295)
9	10D8	Check time of position er...	0	ms(0---65535)
10	5020	position_window_time(F...	100	(0---65536)
11	5086	ReachPosition(For DS402...	1	H(00000000----FFFFFFFF)

*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

Step 4

-> On enable

Monitor

DI/DO Save Reset Adjust Fault Q&A User manual

Setting: 0

Real temperature: CPU 28, Driver 29

digital IO input: DI9, DI0, DO9, DO0

Position loop: On enable, Err reset, Soft Close, Off enable, Run mode

Enable inching test: Continuous, Incremental

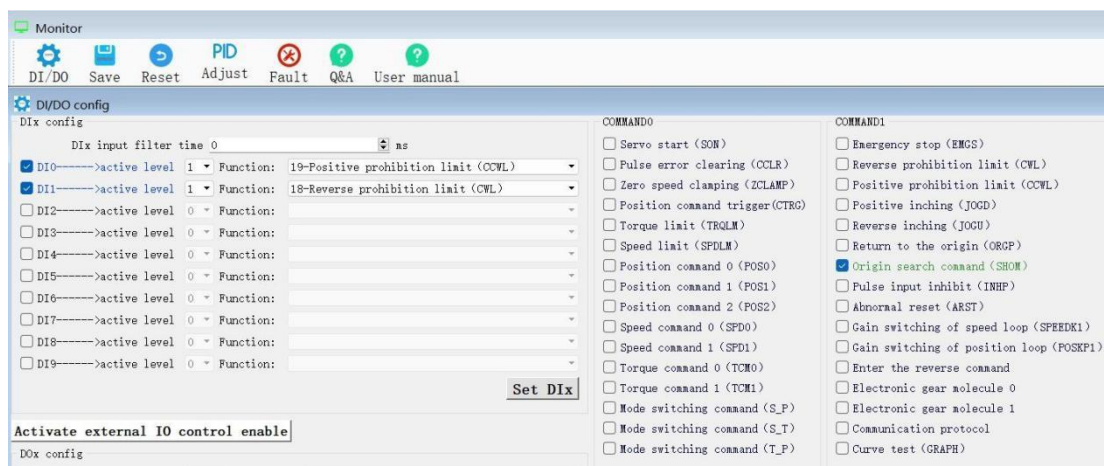
Enable run time: 00:00:00

Step 5

-> DI/DO

-> click "Origin search command (SHOM)"

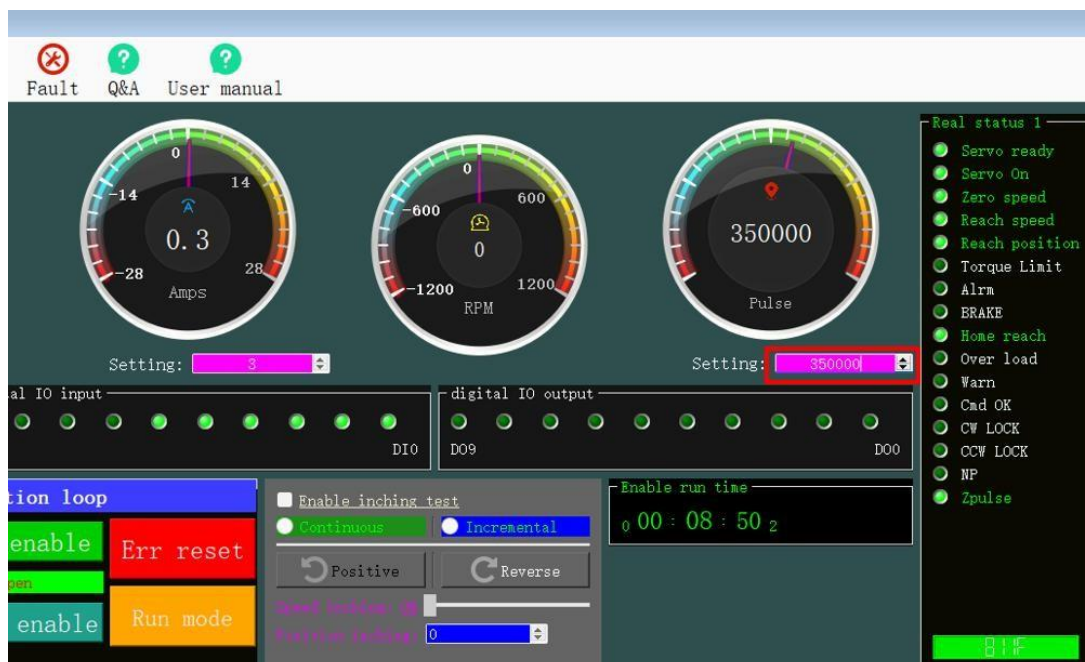
The steering motor begins to find the origin until the positive inching, that is, the forward limit signal is triggered, then the motor stops rotating and the yellow light of the limit switch can be observed.

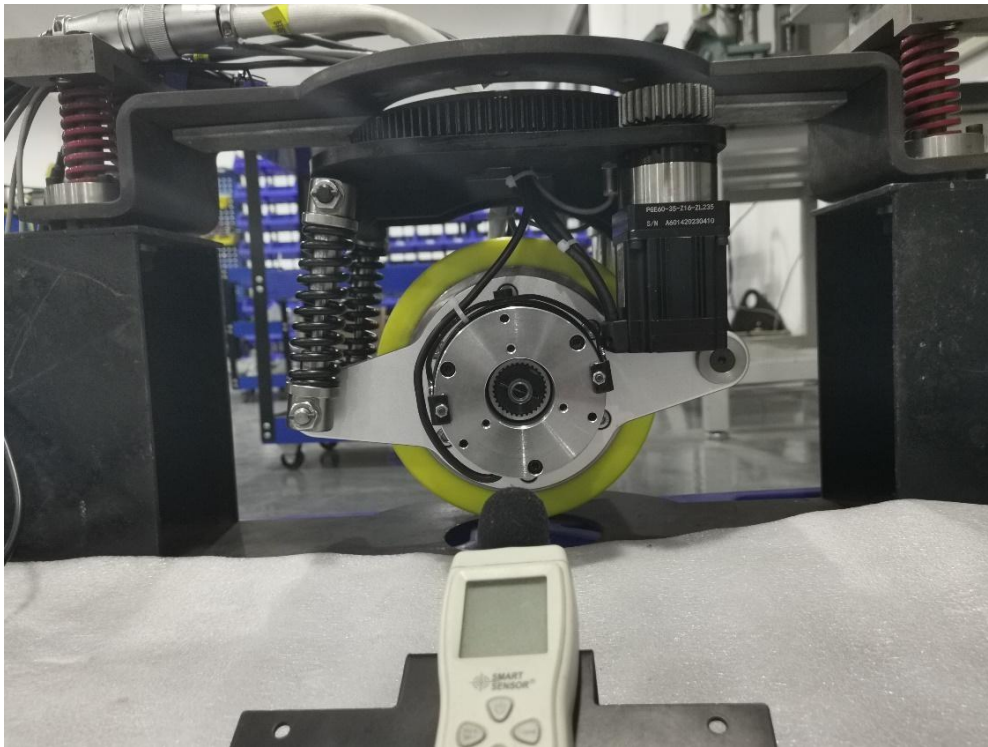


Step 6

-> Enter the number of pulses corresponding to the position in the setting

For example: 350000 (90°), -350000 (-90°)





If the motor runs normally, the test is finished.

3.3 Absolute value encoder test



1. Open the software , select the correct port number, and click "Open serial port"



2. Click "Connect" on the right. If you cannot receive the data you can try to modify the station number



3. Use the MDSM upper position machine to turn the motor to zero, that is, forward forward

4. Use the absolute value encoder, click "set zero" to send the command



5. The absolute value encoder works normally and the test is completed

4. Use of the Routine

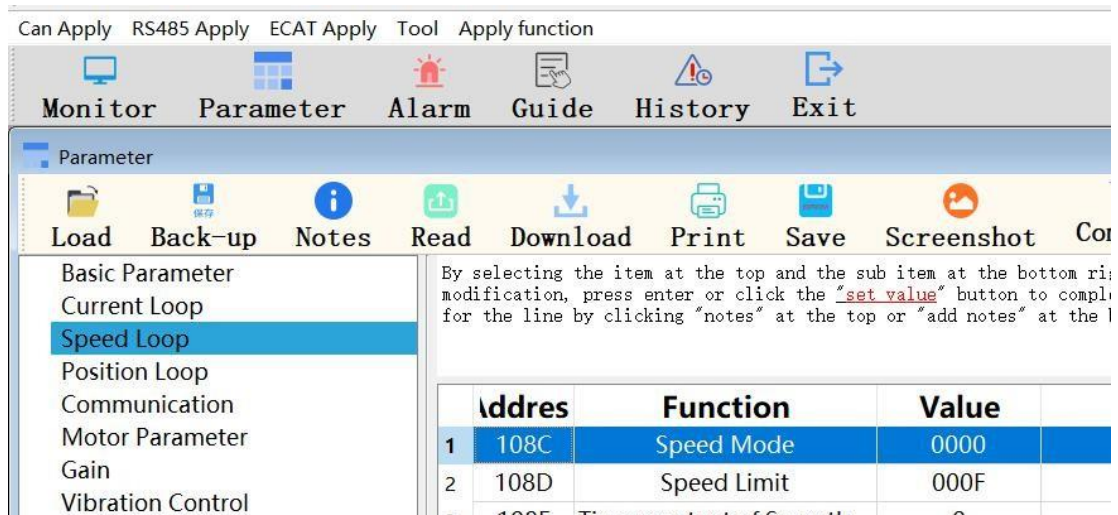
4.1 854 Modbus Use the routine

(1) Control of the walking motor

-> Parameter

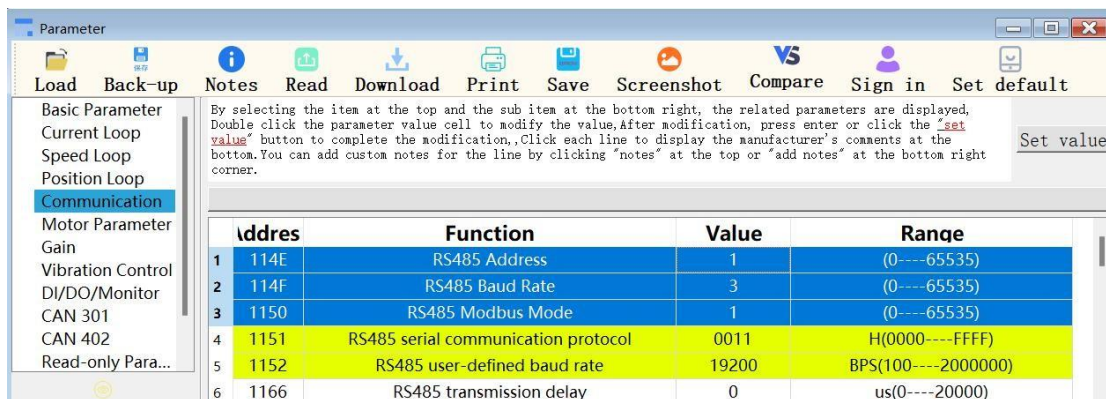
-> Speed Loop

-> set 108C Speed Loop 0000



-> Communication

-> set 114E RS485 Address 1
 114F RS485 Baud Rate 3
 1150 RS485 Modbus Mode 1



-> save

open the software Serial Port Utility

send the command

01 06 10 0a 00 01 6c c8 (Speed mode)

01 06 10 00 00 0a 0d 0d (enable enabled)

01 10 10 02 00 02 04 00 64 00 00 fe 69 (speed 100 RPM)

Motor rotation can be seen

01 06 10 00 00 01 4c ca (off enable)

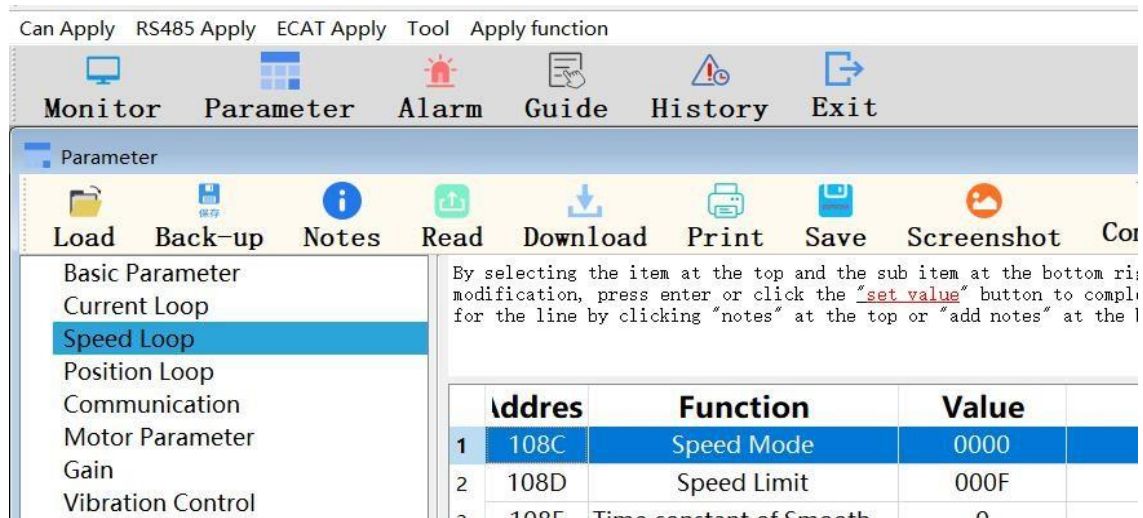
RS485 RTU Mode test is completed

(2) Steering motor control

-> Parameter

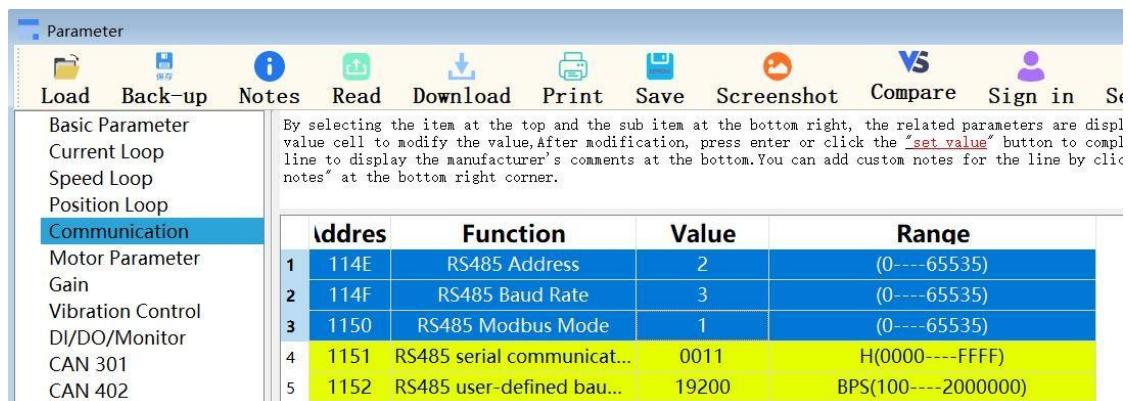
-> Speed Loop

-> set 108C Speed Loop 0000



-> Communication

-> set 114E RS485 Address 2
 114F RS485 Baud Rate 3
 1151 RS485 Modbus Mode 1



-> save

open the software Serial Port Utility

Start the zero-seeking process

02 06 10 00 00 0A 0D 3E (Send enabling command)

02 06 10 0C 00 40 4C CA (bit6 of bit command1, trigger zero finding)

02 10 10 08 00 02 04 00 00 00 00 30 8D (given position 0 brings the wheel to the front)

RS485 RTU Mode test is completed

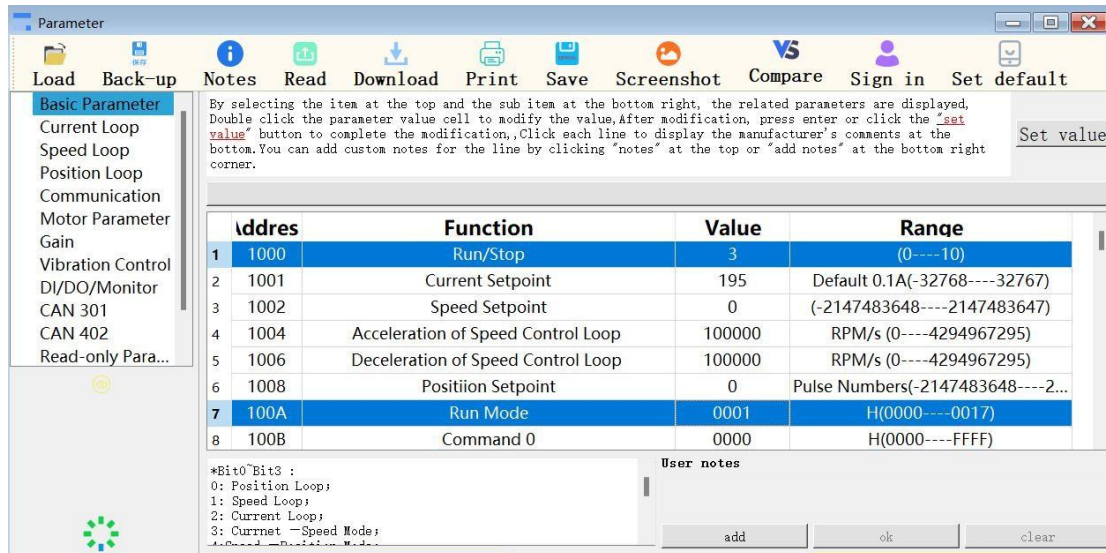
4.2 canopen Use the routine

(1) Control of the walking motor

Step 1

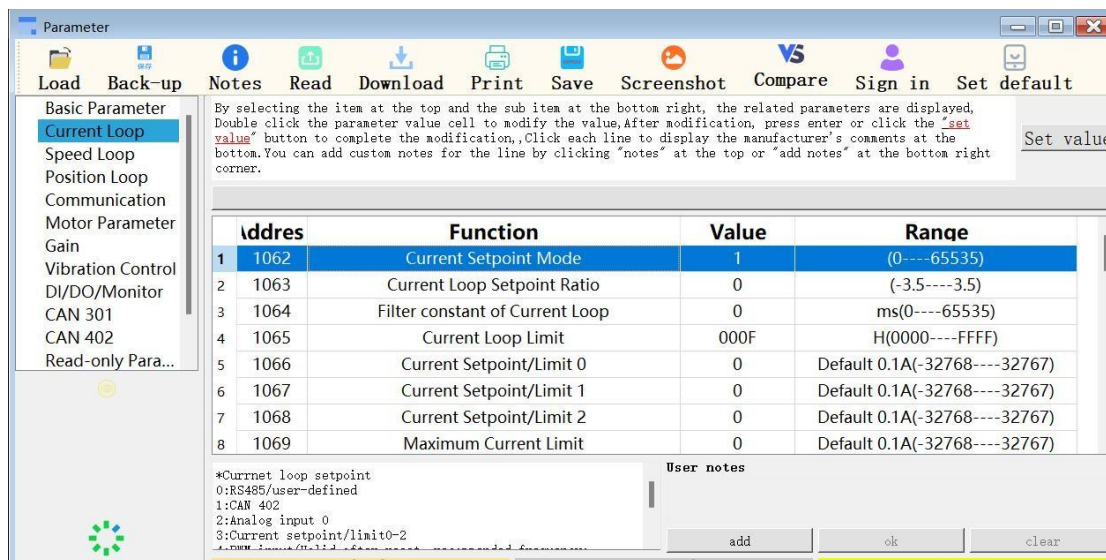
-> Basic Parameter

-> set 1000 Run/Stop3
 100A Run Mode 0001



-> Current Loop

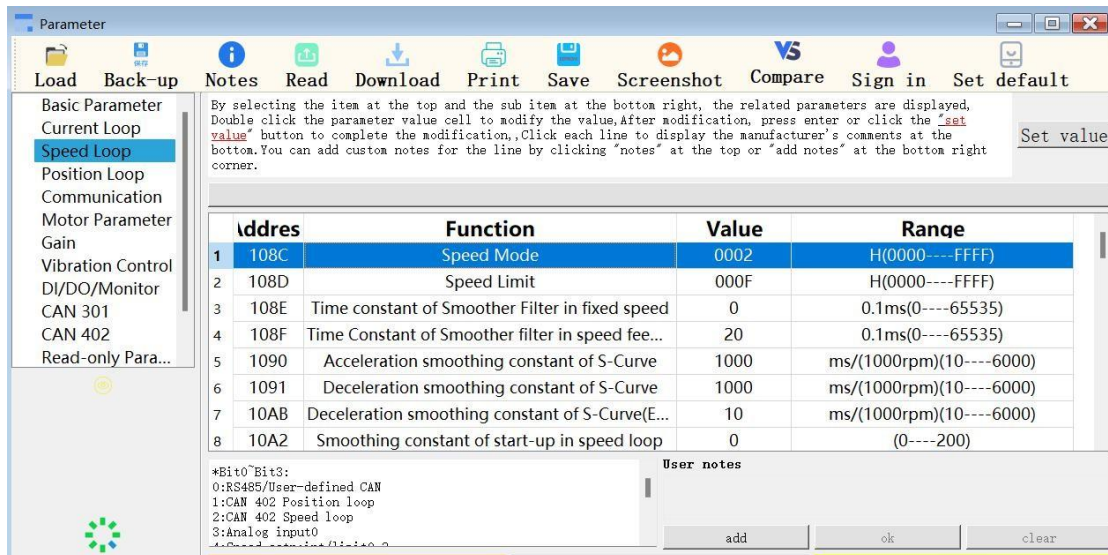
-> set 1062 Current Setpoint Mode 1



Step 2

-> Speed Loop

-> set 108C Speed Mode 0002



Step 3

Communication ->

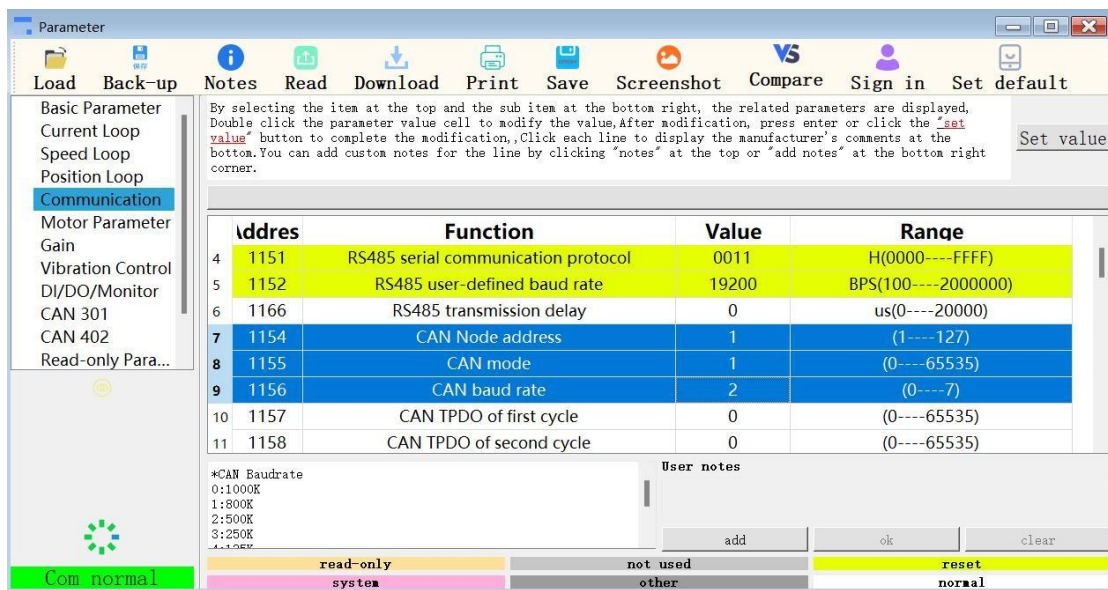
-> set

1154CAN Node address 1

1155CAN mode 1

1156CAN baud rate 2

-> save



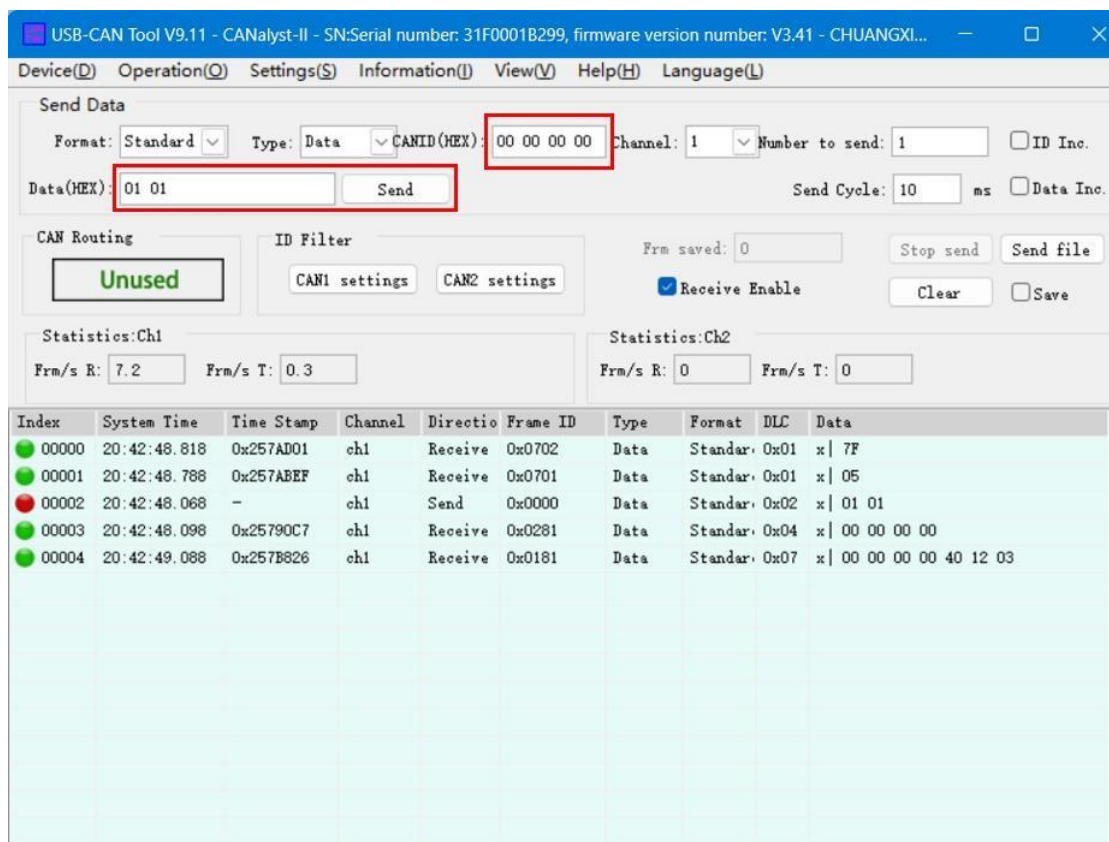
Step 4



-> Open

Walking motor CAN message			
CANID	Command	Exegesis	
000	01 01	Enable node 1	
601	2F 60 60 00 03	Speed mode	
	2B 40 60 00 06 00	The enabling process	Servo fault-free servo is ready
	2B 40 60 00 07 00		The servo is ready to wait for enable
	2B 40 60 00 0F 00		The servo waits to enable the servo operation
	23 FF 60 00 C8 00 00 00	Given the motor speed of 200rpm	
	23 FF 60 00 38 FF FF FF	Given the motor speed-200rpm	

-> send the command one by one



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

(1) Steering motor control

-> Basic Parameter

-> set 1000 Run/Stop3

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 Parameter
User Defined

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.

Addr	Function	Value	Range
1 1000	Run/Stop	3	(0----10)
2 1001	Current Setpoint	60	Default 0.1A(-32768----32767)
3 1002	Speed Setpoint	0	(-2147483648----2147483647)
4 1004	Acceleration of Speed Control Loop	10000	RPM/s (0----4294967295)
5 1006	Deceleration of Speed Control Loop	100000	RPM/s (0----4294967295)
6 1008	Position Setpoint	0	Pulse Numbers(-2147483648----2147483647)
7 100A	Run Mode	0000	H(0000----0017)
8 100B	Command 0	0000	H(0000----FFFF)
9 100C	Command 1	0000	H(0000----FFFF)
10 1027	Command 2	0000	H(0000----FFFF)
11 1024	Shutcut command 1	0	(0----65535)

Run/Stop
0: DI control (Enabled by digit I/O input)
1: Stop (User defined Can, RS485)
3: CANOPEN/ECAT Mode (Only supports DSP402, Run/Stop controlled by Register 0x6040_00, be active after reset - "Backup of Parameter" is required)

User notes

add ok clear

read-only not used reset
system other normal

Com normal

-> Speed Loop

-> set 108C Speed Mode 0001

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 Parameter
User Defined

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.

Addr	Function	Value	Range
1 108C	Speed Mode	0001	H(0000----FFFF)
2 108D	Speed Limit	000F	H(0000----FFFF)
3 108E	Time constant of Smoother Filter in fixed speed	0	0.1ms(0----65535)
4 108F	Time Constant of Smoother filter in speed feedba...	0	0.1ms(0----65535)
5 1090	Acceleration smoothing constant of S-Curve	1000	ms/(1000rpm)(10----6000)
6 1091	Deceleration smoothing constant of S-Curve	1000	ms/(1000rpm)(10----6000)
7 10AB	Deceleration smoothing constant of S-Curve(Emcy)	10	ms/(1000rpm)(10----6000)
8 10A2	Smoothing constant of start-up in speed loop	0	(0----200)
9 1092	Curve type of Motion Control	2	(0----2)
10 5080	CAN402 Trapezoidal acceleration	10000	(0----30000000)

*Bit0~Bit3:
0: RS485/User-defined CAN
1: CAN 402 Position loop
2: CAN 402 Speed loop
3: Analog input0

User notes

add ok clear

read-only not used reset
system other normal

Com normal

-> 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

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

Addr	Function	Value	Range
1 10D0	Position Loop Mode	2	(0----65535)
2 10D1	Electronic Gear Numerate 0	1	(1----65535)
3 10D2	Electronic Gear Numerate 1	1	(1----65535)
4 10D3	Electronic Gear Numerate 2	1	(1----65535)
5 10D4	Electronic Gear Denominator	1	(0----65535)
6 10FA	Position Filter	0	ms(0----65535)
7 10D5	Check time of Reach Position	500	ms(0----65535)
8 10D6	Range of reach position error	5	(0----4294967295)
9 10D8	Check time of position error	0	ms(0----65535)
10 5020	position_window_time(For DS402 only)	100	(0----65536)
11 5086	ReachPosition(For DS402 only)	1	H(00000000----FFFFFFFF)

*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 power-up)

User notes

add ok clear

read-only not used reset
system other normal

Com normal

Parameter

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

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

Addr	Function	Value	Range
19 10E6	Motor Internal Position Command 6	0	(-2147483648----2147483647)
20 10E8	Motor Internal Position Command 7	0	(-2147483648----2147483647)
21 10EA	Find Home	0000	H(0000----FFFF)
22 10EB	Return to Home - Speed 0 (Non CANOPEN)	500	rpm or 0.1rpm(0----32767)
23 10EC	Return to Home - Speed 1 (Non CANOPEN)	100	rpm or 0.1rpm(0----32767)
24 10ED	Return to Home Mode (Non CANOPEN)	2	(0----37)
25 10EE	Position of Home (Non CANOPEN)	00000000	(-2147483648----2147483647)
26 5088	HomePosition	-511100	(-2147483648----2147483647)
27 509B	HomingMethod	2	(-32768----32767)
28 501C	SHOM_Speed32B0	500	(-2147483648----2147483647)
29 501E	SHOM_Speed32B1	100	(-2147483648----2147483647)

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 bit0 (Valid in rising edge)
 3: Reserved

User notes

add ok clear

read-only not used reset
system other normal

Com normal

-> Communication

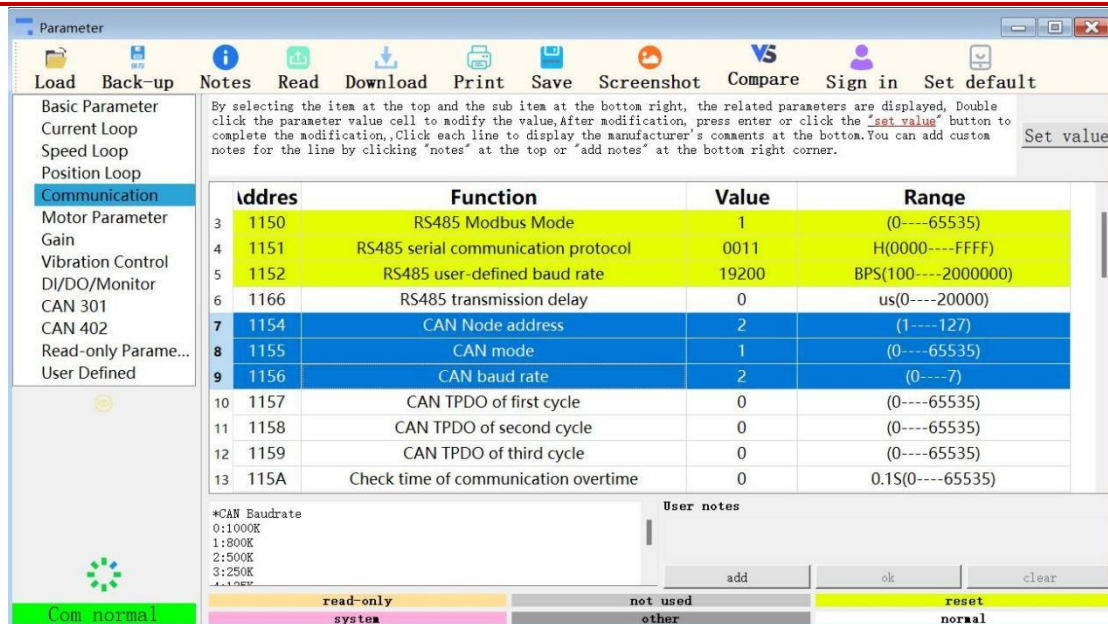
-> set

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 node 2
602	2F 60 60 00 06 00 00 00	Origin Recreation Mode
	2B 40 60 00 0F 00 00 00	The servo waits to enable the servo operation
	2B 40 60 00 1F 00 00 00	Start zero (wait for motor to stop before sending command)
	2F 60 60 00 01 00 00 00	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 1, 000 rpm
	2B 40 60 00 2F 00 00 00	Touch generator operation
	2B 40 60 00 3F 00 00 00	

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 Send Cycle: 10 ms ☐ Data Inc.

CAN Routing Unused **ID Filter** CAN1 settings CAN2 settings Frm saved: 0 Stop send Send file ☒ Receive Enable Clear ☐ 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	chl	Receive	0x0702	Data	Standar	0x01	x 05
00001	19:56:02.946	0xAC1137	chl	Receive	0x0701	Data	Standar	0x01	x 7F
00002	19:55:32.973	-	chl	Send	0x0000	Data	Standar	0x02	x 01 02
00003	19:55:32.976	0xA780C6	chl	Receive	0x0282	Data	Standar	0x04	x 01 00 00 00
00004	19:56:03.276	0xAC1EC5	chl	Receive	0x0182	Data	Standar	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 Send Cycle: 10 ms ☐ Data Inc.

CAN Routing Unused **ID Filter** CAN1 settings CAN2 settings Frm saved: 0 Stop send Send file ☒ Receive Enable Clear ☐ 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	0xBB798D	chl	Receive	0x0702	Data	Standar	0x01	x 05
00001	19:57:43.927	0xBB753B	chl	Receive	0x0701	Data	Standar	0x01	x 7F
00002	19:55:32.973	-	chl	Send	0x0000	Data	Standar	0x02	x 01 02
00003	19:57:43.297	0xBB5CE9	chl	Receive	0x0282	Data	Standar	0x04	x 7C CC 07 00
00004	19:57:44.107	0xBB7C67	chl	Receive	0x0182	Data	Standar	0x07	x 7C CC 07 00 37 16 06
00005	19:57:33.847	0xB9EB61	chl	Receive	0x0582	Data	Standar	0x08	x 60 40 60 00 00 00 00 00
00006	19:57:33.818	-	chl	Send	0x0602	Data	Standar	0x08	x 2B 40 60 00 1F 00 00 00

The test is finished

5. Daily Use and Maintenance

5.1 Handling, storage, and protection

- (1) Drive wheel, in the handling should be light lift, light put, to prevent the motor, encoder, reducer and other parts in the handling under excessive impact and pressure. Do not carry the motor outlet, feedback components, etc. In the process of handling, pay attention to the motor line and feedback element wiring into a coil, and fixed, to prevent the handling process is broken.
- (2) The drive wheel should be stored in a dry, no dust, no corrosive gas and no harmful medium environment, and the ambient temperature is -10-40°C, to avoid motor damage and affecting the operation.

5.2 Notes for use

- (1) The following preparatory work shall be made before the drive wheel is installed or long shelved:
 - a. Check whether the motor and the accessories are complete and complete.
 - b. Check whether the motor and encoder wiring plug are tightened and whether the wiring is correct. Pay attention to the power off wiring, especially when the encoder is used, according to the electrical schematic diagram of the encoder. Can not be wired on live, otherwise it will cause short circuit or damage to the encoder.
- (2) When running the drive wheel, pay attention to the current and speed limits on the motor nameplate, and do not overload the operation for a long time. Peak current, the running time should be less than 2 seconds.
- (3) When the drive wheel is installed on the frame, the large rotary bearing of the steering part should be smeared on and butter to reduce the wear of the engagement between the gears. The wiring harness passes through the hole in the middle of the turntable bearing.
- (4) When the drive wheel is walking, you should open the electromagnetic brake first. After the drive wheel stops, pay attention to the electromagnetic brake power off, so that the electromagnetic brake can hold the brake and realize the parking brake.
- (5) The role of the electromagnetic brake is to realize the parking brake, to prevent the sliding slope, and can not be used to drive the brake wheel from the movement process to the static parking dynamic brake brake.
- (6) The motor must keep the environment clean, and no water or oil shall flow into the motor interior. The motor surface shall be cleaned, especially the lead line. Note that the motor power supply must be cut off during any cleaning work.

5.3 Fault judgment and handling

- (1) Pay close attention to whether there is abnormal sound or vibration during the drive wheel. In case of abnormal situation, stop immediately for inspection.
- (2) When debugging the PID parameters of the drive motor, pay attention to power the electromagnetic brake, and open the electromagnetic brake lock before the motor debugging, otherwise the motor will be damaged.
- (3) During the debugging process, after giving a certain speed to the drive motor, the speed of the drive

wheel gets faster and faster until the stall alarm. At this time , the driver debugging software

should be closed in time to power off the driver and the motor. Check whether the encoder wiring is correct or whether the wiring is falling off.

- (4) When the drive wheel motor accidentally stops running, after troubleshooting the hardware fault, connect the motor driver through the PC, open the drive software, view the software status bar, check the fault display status, and eliminate the software fault according to the prompts.
- (5) Motor failure and correction method of the drive wheel.

Motor speed is not normal	
Cause	Resolvent
(1) Motor PID parameters do not match	Adjust the motor PID parameters
(2) The encoder is not working properly	Check the encoder wiring
The motor is abnormally hot	
Cause	Resolvent
(1) Long-term overload	Restore normal load
(2) Electromagnetic brake holding lock	The brake is electrified and the lock is opened

Note: If the motor is found to be abnormal than the above situation, contact the company in time, and the company and technical personnel shall assist to eliminate the solution.

Declare

In order to ensure the good operation of the drive wheel , please try to choose the company's drive wheel accessories. For all the abnormal accessories , the company does not guarantee the normal operation of the drive wheel.