EYOU CanOpen Quick Debugging Manual V2.0

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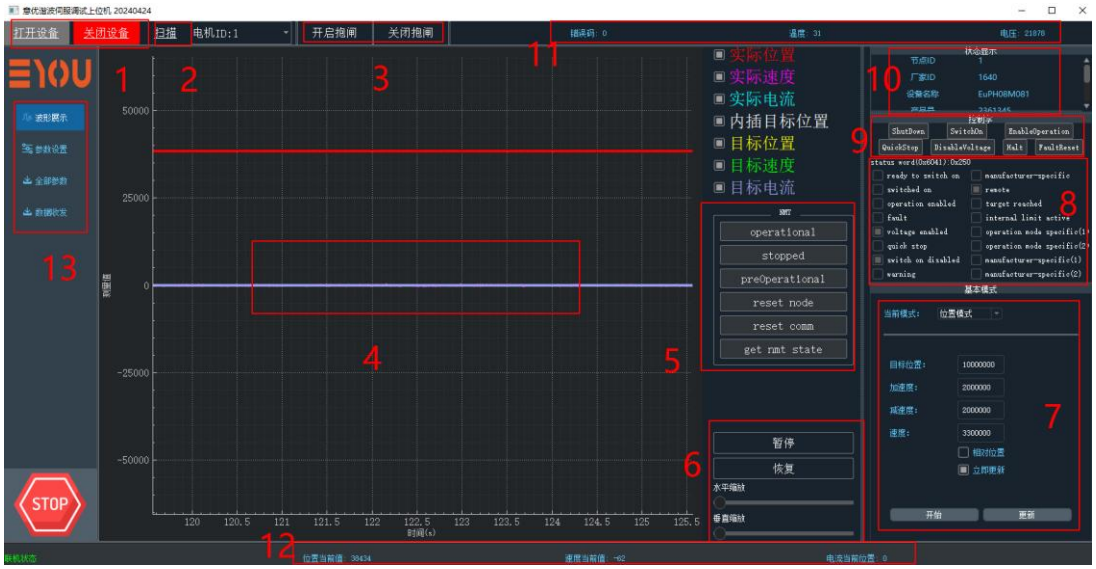
1，Debugging with EYouCanOpenTool

EYouCanOpenTool is a CAN debugging host software developed by our company for debugging CANopen interface motors. It is designed for Windows systems. After installation, the interface is divided into 12 functional areas, as shown below:



Area 1: Open/Close Device

Open Device: Connect to the USB-CAN device by selecting the appropriate device type and baud rate.

If the connection fails, please check:

1) Device type selection.
2) Whether the USB-CAN device is plugged in.
3) USB-CAN driver installation (no driver required for Canable devices).
4) Whether the USB-CAN device is occupied by other software. Close Device: Release the USB-CAN device from the current software.

Area 2: Scan CANopen Motors

Scan for CANopen motors on the USB-CAN bus. Multiple motors with different IDs may appear; select the target motor for operations.

Area 3: Brake Control

Independent control of the brake (only applicable to motors with brakes).

Note: Avoid manually disabling the brake during operation (deactivating brake excitation power will lock the brake), as this may cause friction between the motor and brake.

Area 4: Waveform Display

Select data waveforms via checkboxes in the top-right corner.

Zoom or drag within the area to adjust waveform visualization.

Area 5: CANopen NMT Commands

This area handles CANopen NMT (Network Management) protocol commands.

Note: Users do not need to focus on this section, as NMT operations are automatically integrated into motor control commands within EYouCanOpenTool

Area 6: Waveform Controls

Pause, resume, or zoom waveforms using dedicated buttons.

Area 7: Motion Control

Select operation modes and input parameters to control the motor.

Position Unit: Pulse.

Speed Unit: Pulse/s.

Acceleration/Deceleration Unit: Pulse/(s^2).

Default Pulse Resolution per Motor Revolution: 65536 × Gear Ratio.

Maximum Speed at Rated Voltage: 3,276,800 pulses/s (equivalent to 3000 RPM for the original motor).

Area 8: Real-Time Motor Status

Displays the motor's real-time status.

Area 9: CANopen Control Shortcuts

Quick-access buttons for CANopen control commands.

Area 10: Motor Product Information

Displays motor specifications and product details.

Area 11: Temperature, Error Codes, and Voltage

Displays motor specifications and product details.

Area 12: Textual Data Display

Displays position, temperature, and speed values in text format.

1.1 Motor Parameters

1.1.1 Output Shaft Resolution

The pulse resolution per revolution of the motor's output shaft (via the CANopen protocol) can be read from Object Dictionary 6091-02, as shown below:

226	0x6091	0x1	Gear Ratio Motor Revolutions	5308416	5308416
227	0x6091	0x2	Gear Ratio Shaft Revolutions	5308416	5308416

The value 5,308,416 represents the number of pulses per revolution (PPR) of the motor's output shaft.

Default Calculation: 65,536×Gear Ratio65,536×Gear Ratio.

- The raw motor (before gear reduction) uses a **16-bit resolution** (65,436 pulses per revolution).
- After gear reduction, the PPR becomes 65,536×Gear Ratio65,536×Gear Ratio.
- The screenshot shows two Object Dictionary entries for the **electronic gear ratio numerator and denominator**. Modify **6091-02** to adjust the output shaft resolution.

1.1.2 Output Angle Range

For **dual magnetic encoder, single-turn absolute value models**:

- After power-on, the output angle range is **±180°**.
- Example: For a motor with an **81:1 gear ratio**, the angle range after power-up is **-2,654,208 to +2,654,208 pulses**.

1.1.3 Parameter Units

1. **Position**:
    - Unit: **Pulses** or user-defined pulse units.
    - Example: For an 81:1 gear ratio, 360° corresponds to **5,308,416 pulses** by default.
2. **Velocity**:
    - Unit: **Pulses per second (int32)**, signed (±).
    - Example:
        - +1,000,000+1,000,000: Rotates counterclockwise at a rate of 1,000,000 pulses per second.
        - −1,000,000−1,000,000 (hex: 0xFFF0BDC0): Rotates clockwise at a rate of 1,000,000 pulses per second.
    - **Raw Motor Reference**:
        - 3000 RPM = 50 revolutions per second (RPS).
        - 50 RPS × 65,536 pulses/rev=3,276,800 pulses/sec50RPS×65,536pulses/rev=3,276,800pulses/sec.
        - All raw motors use **16-bit resolution** (65,536 pulses/rev).
3. **Acceleration/Deceleration**:
    - Unit: **Pulses per second squared (uint32)**, unsigned (positive only).
    - Example:
        - 1,000,0001,000,000: Acceleration capability of 1,000,000 pulses/sec².
    - **Maximum Value**: 1×108 pulses/sec21×108pulses/sec2 (100,000,000 pulses/sec²).
4. **Current**:
    - Unit: **Per mille (‰)** of rated torque.
    - **Firmware Versions**:

- **V138 and earlier**: 500 corresponds to rated torque.
- **Post-V138**: 1000 corresponds to rated torque.

1.2 Opening the Device

The EYouCanOpenTool host software currently supports USBCAN devices from Canable and Chuangxin. The Canable device is driver-free.
Connect the USB end of the USBCAN to your computer, and connect the CAN1 port to the motor end with a 120Ω terminal resistor enabled. Ensure the power supply is functioning properly (PH08/PH11 require 24V power). The wiring diagram is as follows:
After correct wiring, click the **"Open Device"--"打开设备"** button. The default baud rate for the motor is selected automatically (factory default: 1000 kbps), as shown below:

If the device fails to open, check the USBCAN driver installation and hardware connections. Upon successful connection, the software will configure the motor's PDOs (Process Data Objects) and read all dictionary data from the motor. When multiple motors are connected, click the **"Scan"--"扫描"** button to refresh the motor IDs and select the target motor for operation.

1.3 Operating the Motor

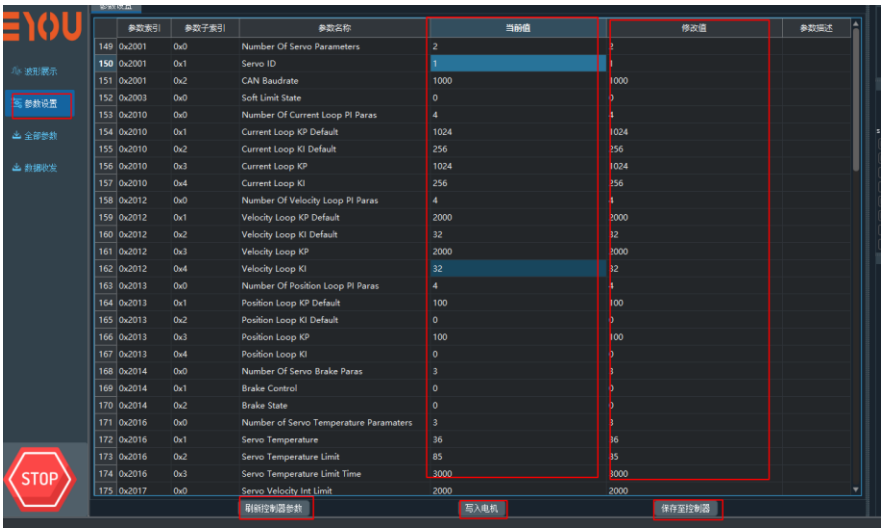
Once the motor is connected properly, use the motor control panel to perform various operations, such as **Position Mode—位置模式**:

The motor's factory default setting is **65536 × reduction ratio pulses per revolution** (or check dictionary entry 6091-02). For example, set the acceleration/deceleration and velocity

to **1,000,000**, and the target position to **1,000,000**. The motor will move to the absolute position of 1,000,000. If the **"Relative Position"--"相对位置"** option is checked, the motor will increment its current position by the target value. Other modes (e.g., velocity mode, torque mode) operate similarly and can be tested for comparison.

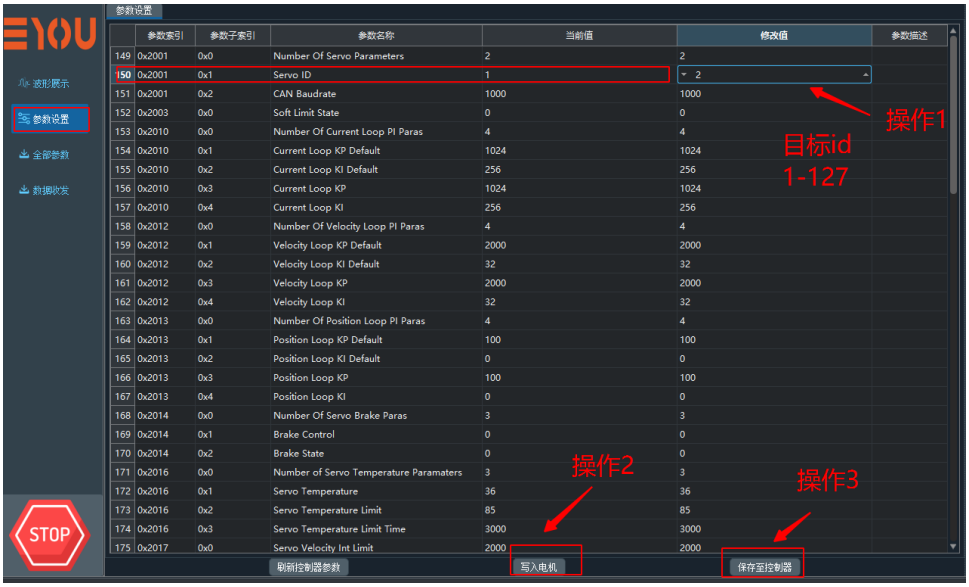
1.4 Parameter Viewing and Modification

Switch to the **"Parameter Settings"--"参数设置"** interface in the host software to read, modify, and save motor parameters. First, click the **[Refresh Controller Parameters] --[刷新控制器参数]** button to read the motor's current data. Enter new values in the corresponding edit fields as needed, then click **[Write to Motor]--[写入电机]**. If modifications require power-cycle retention, click **[Save to Controller] -- [保存至控制器].**



1.4.1 Modifying the ID

Under the Parameter Settings interface, modify **0x2001:01**, then restart the device to apply changes, as shown below:



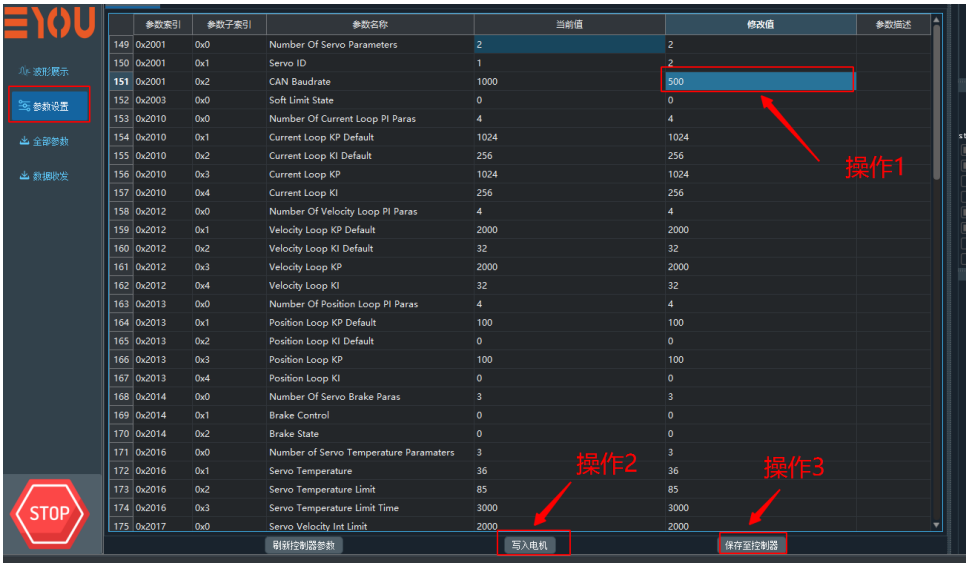
If EYouCanOpenTool is unavailable, use the following CAN commands. For example, to change the ID from 1 to 2:

Direction	CAN ID	CAN Data	Description
Tx	0x601	2F 01 20 01 02 00 00 00	Write 0x02 to dictionary 2001:01 (set ID=2)
Rx	0x581	60 01 20 01 00 00 00 00	
Tx	0x601	23 10 10 01 73 61 76 65	Write 0x65766173 to dictionary 1010:01 (save command)
Rx	0x581	60 10 10 01 00 00 00 00	

After sending these commands, power cycle the device for the new ID to take effect.

1.4.2 Modifying Baud Rate

Under the Parameter Settings interface, modify **0x2001:02,** then restart the device to apply changes.



If EYouCanOpenTool is unavailable, use the following commands (e.g., set baud rate=500 kbps):

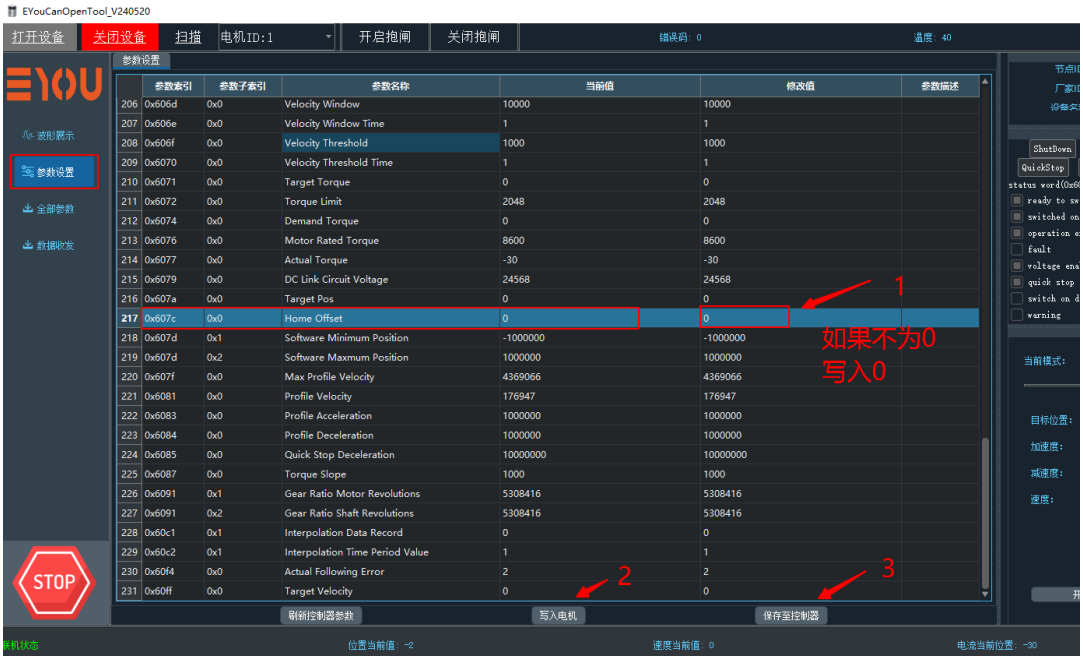
Direction	CAN ID	CAN Data	Description
Tx	0x601	2B 01 20 02 F4 01 00 00	Write 500 (0x01F4) to dictionary 2001:02
Rx	0x581	60 01 20 02 00 00 00 00	
Tx	0x601	23 10 10 01 73 61 76 65	Write 0x65766173 to dictionary 1010:01 (save command)
Rx	0x581	60 10 10 01 00 00 00 00	

Power cycle the device after sending these commands for the new baud rate to take effect.

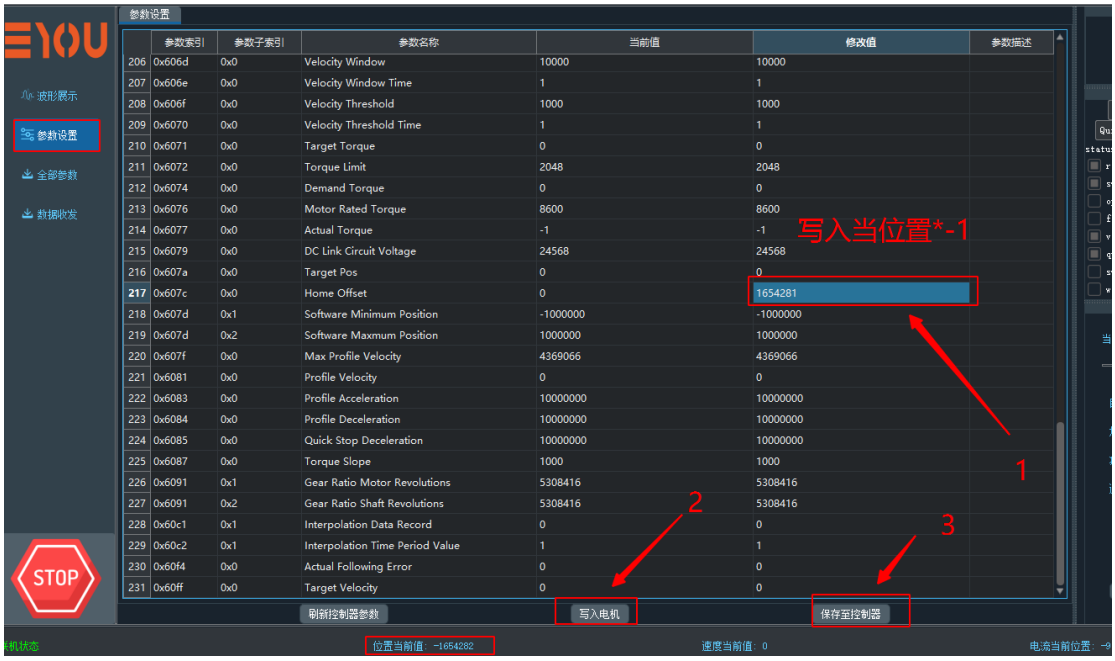
1.4.3 Zero Offset Calibration

After adjusting the zero position:

1. Set the **home offset** dictionary entry to **0** (skip if already 0).
2. Click **[Write to Motor]--[写入点击]** and **[Save to Controller]--[保存至控制器]**.



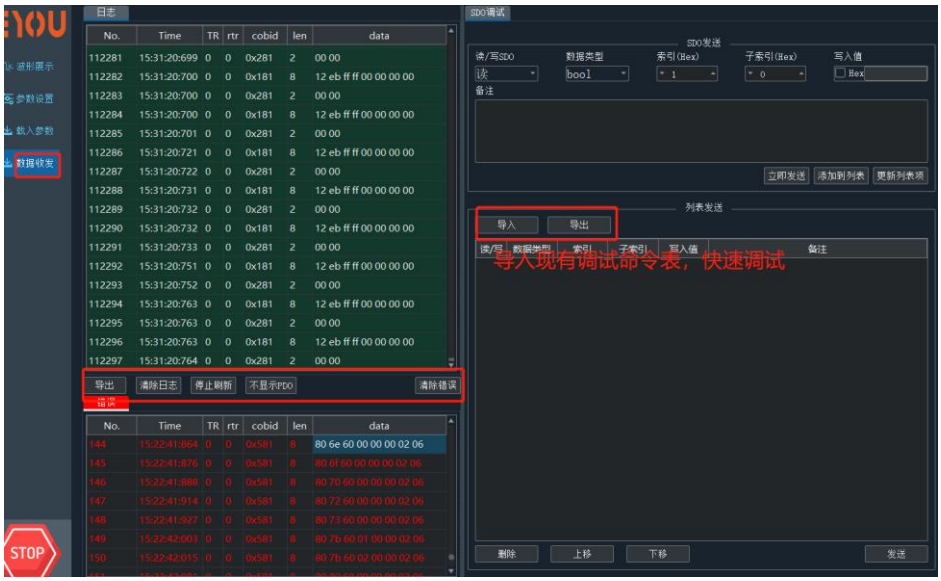
3. If the adjusted position is within **±180 degrees**, no power cycle is required. Otherwise, restart the device.
4. After restarting, rescan to obtain the current position. Write the **negative** of the current position to the **home offset** dictionary, then click **[Write to Motor] --[写入点击]** and **[Save to Controller] --[保存至控制器].**



1.5Data Communication Debugging

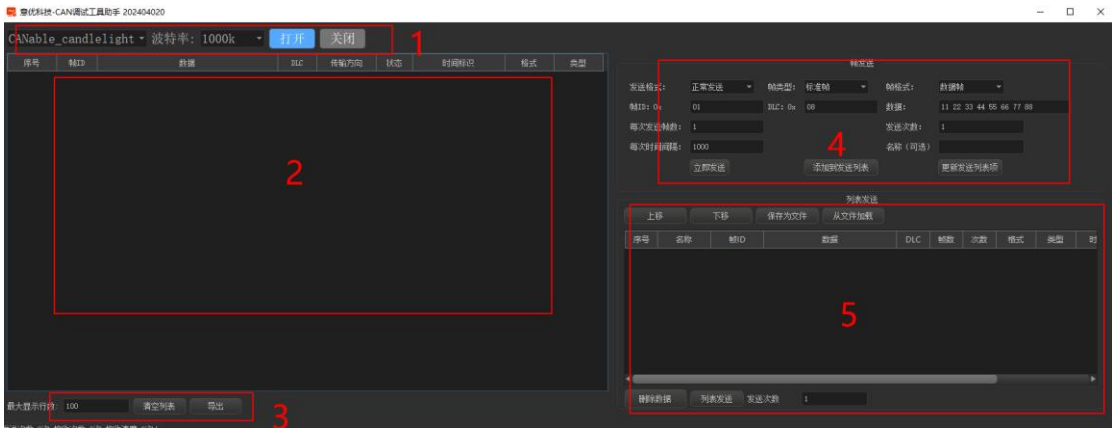
Switch to the **"Data Communication"--" 数据收发 "** interface to monitor real-time communication between the host software and the motor. Manual SDO (Service Data Object) debugging is also supported. You may import our provided debugging command templates

for rapid testing.



2， EYouCanableTool Debugging Guide

EYouCanableTool is a CAN debugging host software developed by our company for the Canable hardware. Users may also utilize other CAN tools or host software for debugging. A screenshot of the EYouCanableTool interface is shown below:



Functional Areas:

1. **Area 1**: Select the motor's corresponding baud rate and click **"Open"—"打开"**. If opening fails, check whether the USBCAN device is connected or occupied by another program.
2. **Area 2**: Communication data display zone.
3. **Area 3**: Adjust the **"Display Row Count"** parameter to increase the number of visible data lines. Supports data export functionality.
4. **Area 4**: Manual CAN data transmission.
5. **Area 5**: Predefined command list. Use the **"Load File"--"** 从文件加载**"** button to import a pre-configured .ini command table for rapid debugging. Debugged command lists can also be exported and saved.

3，Application Development

3.1 PDO Configuration and Mapping

In CANopen applications, **RPDO** (Receive PDO) and **TPDO** (Transmit PDO) are defined from the slave device's perspective:

- **RPDO**: Used by the host to send data to the slave without requiring a response.
- **TPDO**: Used by the slave to upload data to the host without requiring a response. The communication data format must align with the PDO configuration and mapping.

3.1.1TPDO Configuration Example

Example: Configure motor ID=1 to upload **current speed**, **position**, **status word**, and **error code** every **1000 ms**:

序号	名称	帧ID	数据	DLC	帧数	次数	格式	类型	时间间隔
1	NMT复位应用命令	0x00	81 00	0x02	1	1	数据帧	标准帧	10
2	心跳1000ms	0x601	2b 17 10 00 e8 03 00 00	0x08	1	1	数据帧	标准帧	10
3	无效TPDO1	0x601	23 00 18 01 81 01 00 80	0x08	1	1	数据帧	标准帧	10
4	无效TPDO2	0x601	23 01 18 01 81 02 00 80	0x08	1	1	数据帧	标准帧	10
6	TPDO1定时上传数据	0x601	2f 00 18 02 ff 00 00 00	0x08	1	1	数据帧	标准帧	10
7	TPDO2定时上传数据	0x601	2f 01 18 02 ff 00 00 00	0x08	1	1	数据帧	标准帧	10
7	TPDO1定时周期=1000ms	0x601	2b 00 18 05 e8 03 00 00	0x08	1	1	数据帧	标准帧	10
8	TPDO2定时周期=1000ms	0x601	2b 01 18 05 e8 03 00 00	0x08	1	1	数据帧	标准帧	10
12	TPDO1清空映射个数	0x601	2f 00 1a 00 00 00 00 00	0x08	1	1	数据帧	标准帧	10
13	TPDO2清空映射个数	0x601	2f 01 1a 00 00 00 00 00	0x08	1	1	数据帧	标准帧	10
15	TPDO1映射1=当前位置	0x601	23 00 1a 01 20 00 64 60	0x08	1	1	数据帧	标准帧	10
16	TPDO1映射2=当前速度	0x601	23 00 1a 02 20 00 6c 60	0x08	1	1	数据帧	标准帧	10
17	TPDO1映射数=2	0x601	2f 00 1a 00 02 00 00 00	0x08	1	1	数据帧	标准帧	10
18	TPDO2映射1=当前扭矩	0x601	23 01 1a 01 10 00 77 60	0x08	1	1	数据帧	标准帧	10
19	TPDO2映射2=状态字	0x601	23 01 1a 02 10 00 41 60	0x08	1	1	数据帧	标准帧	10
20	TPDO2映射3=错误码	0x601	23 01 1a 03 10 00 3f 60	0x08	1	1	数据帧	标准帧	10
21	TPDO2映射数=3	0x601	2f 01 1a 00 03 00 00 00	0x08	1	1	数据帧	标准帧	10
25	有效TPDO1	0x601	23 00 18 01 81 01 00 00	0x08	1	1	数据帧	标准帧	10
26	有效TPDO2	0x601	23 01 18 01 81 02 00 00	0x08	1	1	数据帧	标准帧	10
28	NMT start命令	0x00	01 00	0x02	1	1	数据帧	标准帧	10

Screenshot of EYouCanableTool Communication Configuration:

序号	帧ID	数据	DLC	传输方向	状态	时间标识	格式	类型
0	0x00	81 00	0x02	发送	成功	21:49:11:173	数据帧	标准帧
1	0x701	00	0x01	接收	成功	21:49:11:174	数据帧	标准帧
2	0x601	2b 17 10 00 e8 03 00 00	0x08	发送	成功	21:49:11:184	数据帧	标准帧
3	0x581	60 17 10 00 00 00 00 00	0x08	接收	成功	21:49:11:186	数据帧	标准帧
4	0x701	7f	0x01	接收	成功	21:49:11:186	数据帧	标准帧
5	0x601	23 00 18 01 81 01 00 80	0x08	发送	成功	21:49:11:195	数据帧	标准帧
6	0x581	60 00 18 01 00 00 00 00	0x08	接收	成功	21:49:11:196	数据帧	标准帧
7	0x601	23 01 18 01 81 02 00 80	0x08	发送	成功	21:49:11:204	数据帧	标准帧
8	0x581	60 01 18 01 00 00 00 00	0x08	接收	成功	21:49:11:206	数据帧	标准帧
9	0x601	2f 00 18 02 ff 00 00 00	0x08	发送	成功	21:49:11:214	数据帧	标准帧
10	0x581	60 00 18 02 00 00 00 00	0x08	接收	成功	21:49:11:215	数据帧	标准帧
11	0x601	2f 01 18 02 ff 00 00 00	0x08	发送	成功	21:49:11:224	数据帧	标准帧
12	0x581	60 01 18 02 00 00 00 00	0x08	接收	成功	21:49:11:226	数据帧	标准帧
13	0x601	2b 00 18 05 e8 03 00 00	0x08	发送	成功	21:49:11:234	数据帧	标准帧
14	0x581	60 00 18 05 00 00 00 00	0x08	接收	成功	21:49:11:237	数据帧	标准帧
15	0x601	2b 01 18 05 e8 03 00 00	0x08	发送	成功	21:49:11:245	数据帧	标准帧
16	0x581	60 01 18 05 00 00 00 00	0x08	接收	成功	21:49:11:248	数据帧	标准帧
17	0x601	2f 00 1a 00 00 00 00 00	0x08	发送	成功	21:49:11:254	数据帧	标准帧
18	0x581	60 00 1a 00 00 00 00 00	0x08	接收	成功	21:49:11:256	数据帧	标准帧
19	0x601	2f 01 1a 00 00 00 00 00	0x08	发送	成功	21:49:11:265	数据帧	标准帧
20	0x581	60 01 1a 00 00 00 00 00	0x08	接收	成功	21:49:11:266	数据帧	标准帧
21	0x601	23 00 1a 01 20 00 64 60	0x08	发送	成功	21:49:11:275	数据帧	标准帧
22	0x581	60 00 1a 01 00 00 00 00	0x08	接收	成功	21:49:11:278	数据帧	标准帧
23	0x601	23 00 1a 02 20 00 6c 60	0x08	发送	成功	21:49:11:285	数据帧	标准帧
24	0x581	60 00 1a 02 00 00 00 00	0x08	接收	成功	21:49:11:287	数据帧	标准帧
25	0x601	2f 00 1a 00 02 00 00 00	0x08	发送	成功	21:49:11:295	数据帧	标准帧
26	0x581	60 00 1a 00 00 00 00 00	0x08	接收	成功	21:49:11:296	数据帧	标准帧
27	0x601	23 01 1a 01 10 00 77 60	0x08	发送	成功	21:49:11:305	数据帧	标准帧
28	0x581	60 01 1a 01 00 00 00 00	0x08	接收	成功	21:49:11:307	数据帧	标准帧
29	0x601	23 01 1a 02 10 00 41 60	0x08	发送	成功	21:49:11:315	数据帧	标准帧
30	0x581	60 01 1a 02 00 00 00 00	0x08	接收	成功	21:49:11:317	数据帧	标准帧
31	0x601	23 01 1a 03 10 00 3f 60	0x08	发送	成功	21:49:11:325	数据帧	标准帧
32	0x581	60 01 1a 03 00 00 00 00	0x08	接收	成功	21:49:11:327	数据帧	标准帧
33	0x601	2f 01 1a 00 03 00 00 00	0x08	发送	成功	21:49:11:335	数据帧	标准帧
34	0x581	60 01 1a 00 00 00 00 00	0x08	接收	成功	21:49:11:336	数据帧	标准帧
35	0x601	23 00 18 01 81 01 00 00	0x08	发送	成功	21:49:11:344	数据帧	标准帧
36	0x581	60 00 18 01 00 00 00 00	0x08	接收	成功	21:49:11:345	数据帧	标准帧
37	0x601	23 01 18 01 81 02 00 00	0x08	发送	成功	21:49:11:354	数据帧	标准帧
38	0x581	60 01 18 01 00 00 00 00	0x08	接收	成功	21:49:11:355	数据帧	标准帧
39	0x00	01 00	0x02	发送	成功	21:49:11:364	数据帧	标准帧
40	0x181	51 80 d7 ff 00 00 00 00	0x08	接收	成功	21:49:11:365	数据帧	标准帧
41	0x281	f6 ff 50 02 00 00	0x06	接收	成功	21:49:11:365	数据帧	标准帧
42	0x701	05	0x01	接收	成功	21:49:12:186	数据帧	标准帧

CAN Data Analysis

Direction	CAN ID (Hex)	CAN Data (Hex)	Description
Tx	0x00	81 00	NMT Reset Application command. Required to initialize PDO configuration.
Rx	–	–	No response.
Tx	0x601	2B 17 10 00 E8 03 00 00	Configure motor heartbeat message with period=1000 ms.
Rx	0x581	60 17 10 00 00 00 00 00	
Tx	0x601	23 00 18 01 81 01 00 80	Disable TPDO1.
Rx	0x581	60 00 18 01 00 00 00 00	
Tx	0x601	23 01 18 01 81 02 00 80	Disable TPDO2.
Rx	0x581	60 01 18 01 00 00 00 00	
Tx	0x601	2F 00 18 02 FF 00 00 00	Set TPDO1 to asynchronous mode (timed transmission).
Rx	0x581	60 00 18 02 00 00 00 00	

Tx	0x601	2F 01 18 02 FF 00 00 00	Set TPDO2 to asynchronous mode (timed transmission).
Rx	0x581	60 01 18 02 00 00 00 00	
Tx	0x601	2B 00 18 05 E8 03 00 00	Set TPDO1 transmission period to 1000 ms (0x03E8 = 1000).
Rx	0x581	60 00 18 05 00 00 00 00	
Tx	0x601	2B 01 18 05 E8 03 00 00	Set TPDO2 transmission period to 1000 ms.
Rx	0x581	60 01 18 05 00 00 00 00	
Tx	0x601	2F 00 1A 00 00 00 00 00	Clear mapped entries for TPDO1.
Rx	0x581	60 00 1A 00 00 00 00 00	
Tx	0x601	2F 01 1A 00 00 00 00 00	Clear mapped entries for TPDO2.
Rx	0x581	60 01 1A 00 00 00 00 00	
Tx	0x601	23 00 1A 01 20 00 64 60	Map TPDO1 entry 1: Current position (0x6064).
Rx	0x581	60 00 1A 01 00 00 00 00	
Tx	0x601	23 00 1A 02 20 00 6C 60	Map TPDO1 entry 2: Current velocity (0x606C).
Rx	0x581	60 00 1A 02 00 00 00 00	
Tx	0x601	2F 00 1A 00 02 00 00 00	Set TPDO1 number of mapped entries to 2.
Rx	0x581	60 00 1A 00 00 00 00 00	
Tx	0x601	23 01 1A 01 10 00 77 60	Map TPDO2 entry 1: Current torque (0x6077).
Rx	0x581	60 01 1A 01 00 00 00 00	
Tx	0x601	23 01 1A 02 10 00 41 60	Map TPDO2 entry 2: Status word (0x6041).
Rx	0x581	60 01 1A 02 00 00 00 00	
Tx	0x601	23 01 1A 03 10 00 3F 60	Map TPDO2 entry 3: Error code (0x603F).
Rx	0x581	60 01 1A 03 00 00 00 00	
Tx	0x601	2F 01 1A 00 03 00 00 00	Set TPDO2 number of mapped entries to 3.
Rx	0x581	60 01 1A 00 00 00 00 00	
Tx	0x601	23 00 18 01 81 01 00 00	Enable TPDO1.
Rx	0x581	60 00 18 01 00 00 00 00	
Tx	0x601	23 01 18 01 81 02 00 00	Enable TPDO2.
Rx	0x581	60 01 18 01 00 00 00 00	

Tx	0x00	01 00	NMT Start command for all slave devices.
After completing the TPDO configuration and sending the **NMT Start** command, TPDO data will be transmitted every **1000 ms**. Example received TPDO data:			
Rx	181	51 80 d7 ff *00 00 00 00*	**CAN ID=181** (Motor TPDO1 of ID=1): • 51 80 D7 FF: Current position (int32, 0xFFD78051 = -2,654,217). • 00 00 00 00: Current velocity (int32).
Rx	281	f6 ff *50 02* **00 00**	**CAN ID=281** (Motor TPDO2 of ID=1): • F6 FF: Current torque (int16). • 50 02: Status word (uint16). • 00 00: Error code (uint16, 0 = no error).
Rx	701	05	**CAN ID=700+ID**, Heartbeat ID: 05 Operational state • 0x04: Stopped, • 0x7F: Pre-operational

Example 2: Configure Motor ID=11 (0x0B)

Set transmission period=1000ms for **current velocity**, **position**, **status word**, and **error code**:

序号	名称	帧ID	数据	DLC	帧数	次数	格式	类型	时间间
1	NMT复位应用命令	0x00	81 00	0x02	1	1	数据帧	标准帧	10
2	心跳1000ms	0x60b	2b 17 10 00 e8 03 00 00	0x08	1	1	数据帧	标准帧	10
3	无效TPDO1	0x60b	23 00 18 01 8b 01 00 80	0x08	1	1	数据帧	标准帧	10
4	无效TPDO2	0x60b	23 01 18 01 8b 02 00 80	0x08	1	1	数据帧	标准帧	10
5	TPDO1定时上传数据	0x60b	2f 00 18 02 ff 00 00 00	0x08	1	1	数据帧	标准帧	10
6	TPDO2定时上传数据	0x60b	2f 01 18 02 ff 00 00 00	0x08	1	1	数据帧	标准帧	10
7	TPDO1定时周期=1000ms	0x60b	2b 00 18 05 e8 03 00 00	0x08	1	1	数据帧	标准帧	10
8	TPDO2定时周期=1000ms	0x60b	2b 01 18 05 e8 03 00 00	0x08	1	1	数据帧	标准帧	10
9	TPDO1清空映射个数	0x60b	2f 00 1a 00 00 00 00 00	0x08	1	1	数据帧	标准帧	10
10	TPDO2清空映射个数	0x60b	2f 01 1a 00 00 00 00 00	0x08	1	1	数据帧	标准帧	10
11	TPDO1映射1=当前位置	0x60b	23 00 1a 01 20 00 64 60	0x08	1	1	数据帧	标准帧	10
12	TPDO1映射2=当前速度	0x60b	23 00 1a 02 20 00 6c 60	0x08	1	1	数据帧	标准帧	10
13	TPDO1映射数=2	0x60b	2f 00 1a 00 02 00 00 00	0x08	1	1	数据帧	标准帧	10
14	TPDO2映射1=当前扭矩	0x60b	23 01 1a 01 10 00 77 60	0x08	1	1	数据帧	标准帧	10
15	TPDO2映射2=状态字	0x60b	23 01 1a 02 10 00 41 60	0x08	1	1	数据帧	标准帧	10
16	TPDO2映射3=错误码	0x60b	23 01 1a 03 10 00 3f 60	0x08	1	1	数据帧	标准帧	10
17	TPDO2映射数=3	0x60b	2f 01 1a 00 03 00 00 00	0x08	1	1	数据帧	标准帧	10
18	有效TPDO1	0x60b	23 00 18 01 8b 01 00 00	0x08	1	1	数据帧	标准帧	10
19	有效TPDO2	0x60b	23 01 18 01 8b 02 00 00	0x08	1	1	数据帧	标准帧	10
28	NMT start命令	0x00	01 00	0x02	1	1	数据帧	标准帧	10

Screenshot of EYouCanableTool Communication Configuration

序号	帧ID	数据	DLC	传输方向	状态	时间标识	格式	类型
0	0x00	81 00	0x02	发送	成功	09:51:56:323	数据帧	标准帧
1	0x70b	00	0x01	接收	成功	09:51:56:324	数据帧	标准帧
2	0x60b	2b 17 10 00 e8 03 00 00	0x08	发送	成功	09:51:56:334	数据帧	标准帧
3	0x58b	60 17 10 00 00 00 00 00	0x08	接收	成功	09:51:56:335	数据帧	标准帧
4	0x70b	7f	0x01	接收	成功	09:51:56:335	数据帧	标准帧
5	0x60b	23 00 18 01 8b 01 00 80	0x08	发送	成功	09:51:56:344	数据帧	标准帧
6	0x58b	60 00 18 01 00 00 00 00	0x08	接收	成功	09:51:56:346	数据帧	标准帧
7	0x60b	23 01 18 01 8b 02 00 80	0x08	发送	成功	09:51:56:355	数据帧	标准帧
8	0x58b	60 01 18 01 00 00 00 00	0x08	接收	成功	09:51:56:356	数据帧	标准帧
9	0x60b	2f 00 18 02 ff 00 00 00	0x08	发送	成功	09:51:56:364	数据帧	标准帧
10	0x58b	60 00 18 02 00 00 00 00	0x08	接收	成功	09:51:56:367	数据帧	标准帧
11	0x60b	2f 01 18 02 ff 00 00 00	0x08	发送	成功	09:51:56:375	数据帧	标准帧
12	0x58b	60 01 18 02 00 00 00 00	0x08	接收	成功	09:51:56:377	数据帧	标准帧
13	0x60b	2b 00 18 05 e8 03 00 00	0x08	发送	成功	09:51:56:384	数据帧	标准帧
14	0x58b	60 00 18 05 00 00 00 00	0x08	接收	成功	09:51:56:385	数据帧	标准帧
15	0x60b	2b 01 18 05 e8 03 00 00	0x08	发送	成功	09:51:56:394	数据帧	标准帧
16	0x58b	60 01 18 05 00 00 00 00	0x08	接收	成功	09:51:56:397	数据帧	标准帧
17	0x60b	2f 00 1a 00 00 00 00 00	0x08	发送	成功	09:51:56:404	数据帧	标准帧
18	0x58b	60 00 1a 00 00 00 00 00	0x08	接收	成功	09:51:56:405	数据帧	标准帧
19	0x60b	2f 01 1a 00 00 00 00 00	0x08	发送	成功	09:51:56:414	数据帧	标准帧
20	0x58b	60 01 1a 00 00 00 00 00	0x08	接收	成功	09:51:56:415	数据帧	标准帧
21	0x60b	23 00 1a 01 20 00 64 60	0x08	发送	成功	09:51:56:424	数据帧	标准帧
22	0x58b	60 00 1a 01 00 00 00 00	0x08	接收	成功	09:51:56:426	数据帧	标准帧
23	0x60b	23 00 1a 02 20 00 6c 60	0x08	发送	成功	09:51:56:434	数据帧	标准帧
24	0x58b	60 00 1a 02 00 00 00 00	0x08	接收	成功	09:51:56:436	数据帧	标准帧
25	0x60b	2f 00 1a 00 02 00 00 00	0x08	发送	成功	09:51:56:444	数据帧	标准帧
26	0x58b	60 00 1a 00 00 00 00 00	0x08	接收	成功	09:51:56:446	数据帧	标准帧
27	0x60b	23 01 1a 01 10 00 77 60	0x08	发送	成功	09:51:56:454	数据帧	标准帧
28	0x58b	60 01 1a 01 00 00 00 00	0x08	接收	成功	09:51:56:455	数据帧	标准帧
29	0x60b	23 01 1a 02 10 00 41 60	0x08	发送	成功	09:51:56:464	数据帧	标准帧
30	0x58b	60 01 1a 02 00 00 00 00	0x08	接收	成功	09:51:56:465	数据帧	标准帧
31	0x60b	23 01 1a 03 10 00 3f 60	0x08	发送	成功	09:51:56:474	数据帧	标准帧
32	0x58b	60 01 1a 03 00 00 00 00	0x08	接收	成功	09:51:56:475	数据帧	标准帧
33	0x60b	2f 01 1a 00 03 00 00 00	0x08	发送	成功	09:51:56:484	数据帧	标准帧
34	0x58b	60 01 1a 00 00 00 00 00	0x08	接收	成功	09:51:56:486	数据帧	标准帧
35	0x60b	23 00 18 01 8b 01 00 00	0x08	发送	成功	09:51:56:494	数据帧	标准帧
36	0x58b	60 00 18 01 00 00 00 00	0x08	接收	成功	09:51:56:495	数据帧	标准帧
37	0x60b	23 01 18 01 8b 02 00 00	0x08	发送	成功	09:51:56:504	数据帧	标准帧
38	0x58b	60 01 18 01 00 00 00 00	0x08	接收	成功	09:51:56:505	数据帧	标准帧
39	0x00	01 00	0x02	发送	成功	09:51:56:514	数据帧	标准帧
40	0x18b	51 80 d7 ff 00 00 00 00	0x08	接收	成功	09:51:56:516	数据帧	标准帧
41	0x28b	f6 ff 50 02 00 00	0x06	接收	成功	09:51:56:516	数据帧	标准帧
42	0x70b	05	0x01	接收	成功	09:51:57:335	数据帧	标准帧
43	0x18b	51 80 d7 ff 0c fe ff ff	0x08	接收	成功	09:51:57:516	数据帧	标准帧
44	0x28b	f5 ff 50 02 00 00	0x06	接收	成功	09:51:57:516	数据帧	标准帧

CAN Data Analysis

Direction	CAN ID (Hex)	CAN Data (Hex)	Description
Tx	0x00	81 00	NMT Reset Application command. Required to initialize PDO configuration.
Rx	–	–	No response.
Tx	0x60B	2B 17 10 00 E8 03 00 00	Configure motor heartbeat message with period=1000 ms.
Rx	0x58B	60 17 10 00 00 00 00 00	
Tx	0x60B	23 00 18 01 8B 01 00 80	Disable TPDO1.
Rx	0x58B	60 00 18 01 00 00 00 00	
Tx	0x60B	23 01 18 01 8B 02 00 80	Disable TPDO2.
Rx	0x58B	60 01 18 01 00 00 00 00	
Tx	0x60B	2F 00 18 02 FF 00 00 00	Set TPDO1 to asynchronous mode (timed transmission).
Rx	0x58B	60 00 18 02 00 00 00 00	

Tx	0x60B	2F 01 18 02 FF 00 00 00	Set TPDO2 to asynchronous mode (timed transmission).
Rx	0x58B	60 01 18 02 00 00 00 00	
Tx	0x60B	2B 00 18 05 E8 03 00 00	Set TPDO1 transmission period to 1000 ms (0x03E8 = 1000).
Rx	0x58B	60 00 18 05 00 00 00 00	
Tx	0x60B	2B 01 18 05 E8 03 00 00	Set TPDO2 transmission period to 1000 ms.
Rx	0x58B	60 01 18 05 00 00 00 00	
Tx	0x60B	2F 00 1A 00 00 00 00 00	Clear mapped entries for TPDO1.
Rx	0x58B	60 00 1A 00 00 00 00 00	
Tx	0x60B	2F 01 1A 00 00 00 00 00	Clear mapped entries for TPDO2.
Rx	0x58B	60 01 1A 00 00 00 00 00	
Tx	0x60B	23 00 1A 01 20 00 64 60	Map TPDO1 entry 1: Current position (0x6064).
Rx	0x58B	60 00 1A 01 00 00 00 00	
Tx	0x60B	23 00 1A 02 20 00 6C 60	Map TPDO1 entry 2: Current velocity (0x606C).
Rx	0x58B	60 00 1A 02 00 00 00 00	
Tx	0x60B	2F 00 1A 00 02 00 00 00	Set TPDO1 number of mapped entries to 2.
Rx	0x58B	60 00 1A 00 00 00 00 00	
Tx	0x60B	23 01 1A 01 10 00 77 60	Map TPDO2 entry 1: Current torque (0x6077).
Rx	0x58B	60 01 1A 01 00 00 00 00	
Tx	0x60B	23 01 1A 02 10 00 41 60	Map TPDO2 entry 2: Status word (0x6041).
Rx	0x58B	60 01 1A 02 00 00 00 00	
Tx	0x60B	23 01 1A 03 10 00 3F 60	Map TPDO2 entry 3: Error code (0x603F).
Rx	0x58B	60 01 1A 03 00 00 00 00	
Tx	0x60B	2F 01 1A 00 03 00 00 00	Set TPDO2 number of mapped entries to 3.
Rx	0x58B	60 01 1A 00 00 00 00 00	
Tx	0x60B	23 00 18 01 8B 01 00 00	Enable TPDO1.
Rx	0x58B	60 00 18 01 00 00 00 00	
Tx	0x60B	23 01 18 01 8B 02 00 00	Enable TPDO2.
Rx	0x58B	60 01 18 01 00 00 00 00	

Tx	0x00	01 00	NMT Start command for all slave devices.
After completing the TPDO configuration and sending the **NMT Start** command, TPDO data will be transmitted every **1000 ms**. Example received TPDO data:			
Rx	18b	51 80 d7 ff *00 00 00 00*	**CAN ID=18B** (Motor TPDO1 of ID=11) • 51 80 D7 FF: Current position (int32, 0xFFD78051 = **-2,654,217**). • 00 00 00 00: Current velocity (int32).
Rx	28b	f6 ff *50 02* **00 00**	**CAN ID=28B** (Motor TPDO2 of ID=11) • F6 FF: Current torque (int16). • 50 02: Status word (uint16). • 00 00: Error code (uint16, **0 = no error**).
Rx	70b	05	**CAN ID=700+ID**, Heartbeat ID: 05 Operational state **Other NMT States** • 0x04: Stopped, • 0x7F: Pre-operational

3.2 Application of Profile Position Mode

In **Profile Position Mode**, the motor plans its trajectory based on configured acceleration, deceleration, constant velocity, and target position.

Example 1: Controlling motor ID=1 with a **reduction ratio of 101** (output resolution = 6,619,136) via SDO commands:

Screenshot of EYouCanableTool Command Table:

序号	名称	帧ID	数据	DLC	帧数	次数	格式	类型	时间间隔
1	控制字=06	0x601	2b 40 60 00 06 00 00 00	0x08	1	1	数据帧	标准帧	100
2	轨迹位置模式	0x601	2f 60 60 00 01 00 00 00	0x08	1	1	数据帧	标准帧	10
3	设置速度=60度/秒(101减...	0x601	23 81 60 00 55 d5 10 00	0x08	1	1	数据帧	标准帧	10
4	设置加速度=60度/(秒*秒)	0x601	23 83 60 00 55 d5 10 00	0x08	1	1	数据帧	标准帧	10
5	设置减速度=60度/(秒*秒)	0x601	23 84 60 00 55 d5 10 00	0x08	1	1	数据帧	标准帧	10
6	控制字=07	0x601	2b 40 60 00 07 00 00 00	0x08	1	1	数据帧	标准帧	10
7	控制字=0f	0x601	2b 40 60 00 0f 00 00 00	0x08	1	1	数据帧	标准帧	10
8	控制字=2f	0x601	2b 40 60 00 2f 00 00 00	0x08	1	1	数据帧	标准帧	10
9	目标位置=360度	0x601	23 7a 60 00 00 00 65 00	0x08	1	1	数据帧	标准帧	10
10	控制字=3f	0x601	2b 40 60 00 3f 00 00 00	0x08	1	1	数据帧	标准帧	10000
11	控制字=2f	0x601	2b 40 60 00 2f 00 00 00	0x08	1	1	数据帧	标准帧	10
12	目标位置=0度	0x601	23 7a 60 00 00 00 00 00	0x08	1	1	数据帧	标准帧	10
13	控制字=3f	0x601	2b 40 60 00 3f 00 00 00	0x08	1	1	数据帧	标准帧	3000

Screenshot of EYouCanableTool Communication:

序号	帧ID	数据	DLC	传输方向	状态	时间标识	格式	类型
0	0x601	2b 40 60 00 06 00 00 00	0x08	发送	成功	21:25:49:726	数据帧	标准帧
1	0x581	60 40 60 00 00 00 00 00	0x08	接收	成功	21:25:49:727	数据帧	标准帧
2	0x601	2f 60 60 00 01 00 00 00	0x08	发送	成功	21:25:49:829	数据帧	标准帧
3	0x581	60 60 60 00 00 00 00 00	0x08	接收	成功	21:25:49:830	数据帧	标准帧
4	0x601	23 81 60 00 55 d5 10 00	0x08	发送	成功	21:25:49:841	数据帧	标准帧
5	0x581	60 81 60 00 00 00 00 00	0x08	接收	成功	21:25:49:843	数据帧	标准帧
6	0x601	23 83 60 00 55 d5 10 00	0x08	发送	成功	21:25:49:850	数据帧	标准帧
7	0x581	60 83 60 00 00 00 00 00	0x08	接收	成功	21:25:49:852	数据帧	标准帧
8	0x601	23 84 60 00 55 d5 10 00	0x08	发送	成功	21:25:49:860	数据帧	标准帧
9	0x581	60 84 60 00 00 00 00 00	0x08	接收	成功	21:25:49:862	数据帧	标准帧
10	0x601	2b 40 60 00 07 00 00 00	0x08	发送	成功	21:25:49:871	数据帧	标准帧
11	0x581	60 40 60 00 00 00 00 00	0x08	接收	成功	21:25:49:873	数据帧	标准帧
12	0x601	2b 40 60 00 0f 00 00 00	0x08	发送	成功	21:25:49:881	数据帧	标准帧
13	0x581	60 40 60 00 00 00 00 00	0x08	接收	成功	21:25:49:884	数据帧	标准帧
14	0x601	2b 40 60 00 2f 00 00 00	0x08	发送	成功	21:25:49:891	数据帧	标准帧
15	0x581	60 40 60 00 00 00 00 00	0x08	接收	成功	21:25:49:892	数据帧	标准帧
16	0x601	23 7a 60 00 00 00 65 00	0x08	发送	成功	21:25:49:901	数据帧	标准帧
17	0x581	60 7a 60 00 00 00 00 00	0x08	接收	成功	21:25:49:903	数据帧	标准帧
18	0x601	2b 40 60 00 3f 00 00 00	0x08	发送	成功	21:25:49:911	数据帧	标准帧
19	0x581	60 40 60 00 00 00 00 00	0x08	接收	成功	21:25:49:913	数据帧	标准帧
20	0x601	2b 40 60 00 2f 00 00 00	0x08	发送	成功	21:25:59:906	数据帧	标准帧
21	0x581	60 40 60 00 00 00 00 00	0x08	接收	成功	21:25:59:907	数据帧	标准帧
22	0x601	23 7a 60 00 00 00 00 00	0x08	发送	成功	21:25:59:918	数据帧	标准帧
23	0x581	60 7a 60 00 00 00 00 00	0x08	接收	成功	21:25:59:921	数据帧	标准帧
24	0x601	2b 40 60 00 3f 00 00 00	0x08	发送	成功	21:25:59:928	数据帧	标准帧
25	0x581	60 40 60 00 00 00 00 00	0x08	接收	成功	21:25:59:931	数据帧	标准帧

CAN Data Analysis

Direction	CAN ID (Hex)	CAN Data (Hex)	Description
Tx	0x601	2B 40 60 00 06 00 00 00	Control Word=0x06 (Shutdown command).
Rx	0x581	60 40 60 00 00 00 00 00	
Tx	0x601	2F 60 60 00 01 00 00 00	Operation Mode=0x01 (Profile Position Mode).
Rx	0x581	60 60 60 00 00 00 00 00	
Tx	0x601	23 81 60 00 55 D5 10 00	Set constant velocity=60°/s (for reduction ratio=101: 1,103,189 pulses = 60°).
Rx	0x581	60 81 60 00 00 00 00 00	
Tx	0x601	23 83 60 00 55 D5 10 00	Set acceleration=60°/(s²).
Rx	0x581	60 83 60 00 00 00 00 00	
Tx	0x601	23 84 60 00 55 D5 10 00	Set deceleration=60°/(s²).
Rx	0x581	60 84 60 00 00 00 00 00	
Tx	0x601	2B 40 60 00 07 00 00 00	Control Word=0x07 (Switch On command).
Rx	0x581	60 40 60 00 00 00 00 00	
Tx	0x601	2B 40 60 00 0F 00 00 00	Control Word=0x0F (Operation Enable command).
Rx	0x581	60 40 60 00 00 00 00 00	
Note: The above steps complete power-on enablement and motion parameter configuration. Verify the motor's status via the status word (e.g., bit 10 indicates target			

reached).			
Tx	601	2b 40 60 00 2f 00 00 00	Control Word=0x2F - Reset the "Immediate Position Update" flag.
Rx	581	60 40 60 00 00 00 00 00	
Tx	601	23 7a 60 00 00 00 65 00	Set Target Position=360° (absolute).
返回	581	60 7a 60 00 00 00 00 00	
Tx	601	2b 40 60 00 3f 00 00 00	Control Word=0x3F - Set the "Immediate Position Update" flag.
Rx	581	60 40 60 00 00 00 00 00	
The above three commands constitute the **absolute position update sequence**. While the motor remains enabled, simply repeat these three commands to set a new target position. To determine whether the previous target position has been reached: 1. Monitor **bit 10 of the Status Word (0x6041)**. If bit 10 = 1, the target position is achieved. Then, update subsequent target positions **as needed**. 2. Alternatively, you may **directly update the target position** based on operational requirements. If the motor is already in motion, it will **interrupt the current trajectory** and **replan a new motion path** according to the updated target.			
Tx	0x601	2B 40 60 00 2F 00 00 00	Control Word=0x2F - Reset the "Immediate Position Update" flag.
Rx	0x581	60 40 60 00 00 00 00 00	
Tx	0x601	23 7A 60 00 00 00 00 00	Set Target Position=0° (absolute).
Rx	0x581	60 7A 60 00 00 00 00 00	
Tx	0x601	2B 40 60 00 3F 00 00 00	Control Word=0x3F - Set the "Immediate Position Update" flag.
Rx	0x581	60 40 60 00 00 00 00 00	
The above three commands form the absolute position update sequence. If the motor remains enabled and outputs are active, simply cycle through these three commands to continuously update target positions. **During operation, you can select different stopping modes as needed. Here, two methods are illustrated: shutdown stopping and halt stopping. Choose either one based on operational requirements.**			
Tx	0x601	2B 40 60 00 06 00 00 00	Control Word=0x06 - Shutdown command. The motor decelerates to stop via the configured deceleration ramp, disables output, and engages the brake. Re-enablement is required to resume control.
Rx	0x581	60 40 60 00 00 00 00 00	
Tx	0x601	2B 40 60 00 0F 01 00 00	Control Word=0x10F - Halt command. The motor decelerates to stop via the configured deceleration ramp but maintains output enablement. New target positions can be updated using the 0x2F → Position → 0x3F sequence.

Rx	0x581	60 40 60 00 00 00 00 00	

Example 2: Motor ID=11 (0x0B) with Reduction Ratio=121

Configure a motor with **reduction ratio=121** (output resolution=7,929,856) using SDO commands:

Screenshot of EYouCanableTool Command Table:

序号	名称	帧ID	数据	DLC	帧数	次数	格式	类型	时间间隔
1	控制字=06	0x60b	2b 40 60 00 06 00 00 00	0x08	1	1	数据帧	标准帧	100
2	轨迹位置模式	0x60b	2f 60 60 00 01 00 00 00	0x08	1	1	数据帧	标准帧	10
3	设置速度=90度/秒(121减速比)	0x60b	23 81 60 00 00 40 1e 00	0x08	1	1	数据帧	标准帧	10
4	设置加速度=90度/(秒*秒)	0x60b	23 83 60 00 00 40 1e 00	0x08	1	1	数据帧	标准帧	10
5	设置减速度=90度/(秒*秒)	0x60b	23 84 60 00 00 40 1e 00	0x08	1	1	数据帧	标准帧	10
6	控制字=07	0x60b	2b 40 60 00 07 00 00 00	0x08	1	1	数据帧	标准帧	10
7	控制字=0f	0x60b	2b 40 60 00 0f 00 00 00	0x08	1	1	数据帧	标准帧	10
8	控制字=2f	0x60b	2b 40 60 00 2f 00 00 00	0x08	1	1	数据帧	标准帧	10
9	目标位置=50度	0x60b	23 7a 60 00 39 ce 10 00	0x08	1	1	数据帧	标准帧	10
10	控制字=3f	0x60b	2b 40 60 00 3f 00 00 00	0x08	1	1	数据帧	标准帧	3000
11	控制字=2f	0x60b	2b 40 60 00 2f 00 00 00	0x08	1	1	数据帧	标准帧	10
12	目标位置=-10度	0x60b	23 7a 60 00 8e a3 fc ff	0x08	1	1	数据帧	标准帧	10
13	控制字=3f	0x60b	2b 40 60 00 3f 00 00 00	0x08	1	1	数据帧	标准帧	3000
14	控制字=2f	0x60b	2b 40 60 00 2f 00 00 00	0x08	1	1	数据帧	标准帧	10
15	目标位置=0度	0x60b	23 7a 60 00 00 00 00 00	0x08	1	1	数据帧	标准帧	10
16	控制字=3f	0x60b	2b 40 60 00 3f 00 00 00	0x08	1	1	数据帧	标准帧	3000

Screenshot of EYouCanableTool Communication Data:

序号	帧ID	数据	DLC	传输方向	状态	时间标识	格式	类型
0	0x60b	2b 40 60 00 06 00 00 00	0x08	发送	成功	20:37:47:114	数据帧	标准帧
1	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:47:115	数据帧	标准帧
2	0x60b	2f 60 60 00 01 00 00 00	0x08	发送	成功	20:37:47:216	数据帧	标准帧
3	0x58b	60 60 60 00 00 00 00 00	0x08	接收	成功	20:37:47:218	数据帧	标准帧
4	0x60b	23 81 60 00 00 40 1e 00	0x08	发送	成功	20:37:47:228	数据帧	标准帧
5	0x58b	60 81 60 00 00 00 00 00	0x08	接收	成功	20:37:47:229	数据帧	标准帧
6	0x60b	23 83 60 00 00 40 1e 00	0x08	发送	成功	20:37:47:238	数据帧	标准帧
7	0x58b	60 83 60 00 00 00 00 00	0x08	接收	成功	20:37:47:240	数据帧	标准帧
8	0x60b	23 84 60 00 00 40 1e 00	0x08	发送	成功	20:37:47:248	数据帧	标准帧
9	0x58b	60 84 60 00 00 00 00 00	0x08	接收	成功	20:37:47:249	数据帧	标准帧
10	0x60b	2b 40 60 00 07 00 00 00	0x08	发送	成功	20:37:47:258	数据帧	标准帧
11	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:47:260	数据帧	标准帧
12	0x60b	2b 40 60 00 0f 00 00 00	0x08	发送	成功	20:37:47:268	数据帧	标准帧
13	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:47:269	数据帧	标准帧
14	0x60b	2b 40 60 00 2f 00 00 00	0x08	发送	成功	20:37:47:278	数据帧	标准帧
15	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:47:280	数据帧	标准帧
16	0x60b	23 7a 60 00 39 ce 10 00	0x08	发送	成功	20:37:47:288	数据帧	标准帧
17	0x58b	60 7a 60 00 00 00 00 00	0x08	接收	成功	20:37:47:289	数据帧	标准帧
18	0x60b	2b 40 60 00 3f 00 00 00	0x08	发送	成功	20:37:47:298	数据帧	标准帧
19	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:47:299	数据帧	标准帧
20	0x60b	2b 40 60 00 2f 00 00 00	0x08	发送	成功	20:37:50:295	数据帧	标准帧
21	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:50:297	数据帧	标准帧
22	0x60b	23 7a 60 00 8e a3 fc ff	0x08	发送	成功	20:37:50:307	数据帧	标准帧
23	0x58b	60 7a 60 00 00 00 00 00	0x08	接收	成功	20:37:50:309	数据帧	标准帧
24	0x60b	2b 40 60 00 3f 00 00 00	0x08	发送	成功	20:37:50:317	数据帧	标准帧
25	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:50:318	数据帧	标准帧
26	0x60b	2b 40 60 00 2f 00 00 00	0x08	发送	成功	20:37:53:324	数据帧	标准帧
27	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:53:326	数据帧	标准帧
28	0x60b	23 7a 60 00 00 00 00 00	0x08	发送	成功	20:37:53:337	数据帧	标准帧
29	0x58b	60 7a 60 00 00 00 00 00	0x08	接收	成功	20:37:53:338	数据帧	标准帧
30	0x60b	2b 40 60 00 3f 00 00 00	0x08	发送	成功	20:37:53:347	数据帧	标准帧
31	0x58b	60 40 60 00 00 00 00 00	0x08	接收	成功	20:37:53:348	数据帧	标准帧

CAN Data Analysis

Direction	CAN ID (Hex)	CAN Data (Hex)	Description
Tx	0x60B	2B 40 60 00 06 00 00 00	Control Word=0x06 (Shutdown command).
Rx	0x58B	60 40 60 00 00 00 00 00	
Tx	0x60B	2F 60 60 00 01 00 00 00	Operation Mode=0x01 (Profile Position Mode).
Rx	0x58B	60 60 60 00 00 00 00 00	
Tx	0x60B	23 81 60 00 00 40 1E 00	Set constant velocity=90 ° /s (1,982,464 pulses = 90° for ratio=121).
Rx	0x58B	60 81 60 00 00 00 00 00	
Tx	0x60B	23 83 60 00 00 40 1E 00	Set acceleration=60°/s².
Rx	0x58B	60 83 60 00 00 00 00 00	
Tx	0x60B	23 84 60 00 00 40 1E 00	Set deceleration=60°/s².
Rx	0x58B	60 84 60 00 00 00 00 00	
Tx	0x60B	2B 40 60 00 07 00 00 00	Control Word=0x07 (Switch On command).
Rx	0x58B	60 40 60 00 00 00 00 00	

Tx	0x60B	2B 40 60 00 0F 00 00 00	Control Word=0x0F (Operation Enable command).
Rx	0x58B	60 40 60 00 00 00 00 00	
The above sequence of commands completes the power-on enablement and motion parameter configuration. At this stage, the motor should be in the enabled state (operational). You can verify whether the state transitions are successful by querying the Status Word.			
Tx	0x60B	2B 40 60 00 2F 00 00 00	Control Word=0x2F - Reset the "Immediate Position Update" flag.
Rx	0x58B	60 40 60 00 00 00 00 00	
Tx	0x60B	23 7A 60 00 39 CE 10 00	Set Target Position=50° (absolute).
Rx	0x58B	60 7A 60 00 00 00 00 00	
Tx	0x60B	2B 40 60 00 3F 00 00 00	Control Word=0x3F - Set the "Immediate Position Update" flag.
Rx	0x58B	60 40 60 00 00 00 00 00	
The above three commands constitute the **absolute position update sequence**. While the motor remains enabled, simply repeat these three commands to set a new target position. To determine whether the previous target position has been reached: 1. Monitor **bit 10 of the Status Word (0x6041)**. If bit 10 = 1, the target position is achieved. Then, update subsequent target positions **as needed**. Alternatively, you may **directly update the target position** based on operational requirements. If the motor is already in motion, it will **interrupt the current trajectory** and **replan a new motion path** according to the updated target.			
Tx	0x60B	2B 40 60 00 2F 00 00 00	Control Word=0x2F - Reset the "Immediate Position Update" flag.
Rx	0x58B	60 40 60 00 00 00 00 00	
Tx	0x60B	23 7A 60 00 8E A3 FC FF	Set Target Position=-10° (absolute).
Rx	0x58B	60 7A 60 00 00 00 00 00	
Tx	0x60B	2B 40 60 00 3F 00 00 00	Control Word=0x3F - Set the "Immediate Position Update" flag.
Rx	0x58B	60 40 60 00 00 00 00 00	
After confirming the target position is reached, proceed to update subsequent new position commands.			
Tx	0x60B	2B 40 60 00 2F 00 00 00	Control Word=0x2F - Reset the "Immediate Position Update" flag.
Rx	0x58B	60 40 60 00 00 00 00 00	
Tx	0x60B	23 7A 60 00 00 00 00 00	Set Target Position=0° (absolute).
Rx	0x58B	60 7A 60 00 00 00 00 00	
Tx	0x60B	2B 40 60 00 3F 00 00 00	Control Word=0x3F - Set the "Immediate Position Update" flag.
Rx	0x58B	60 40 60 00 00 00 00 00	
The above three commands constitute the absolute position update sequence. If the			

motor remains enabled and outputs are active, simply cycle through these three commands to continuously update target positions. **During operation, you can select different stopping modes as needed. Here, two methods are illustrated: shutdown stopping and halt stopping. Choose either one based on operational requirements.**			
Tx	0x60B	2B 40 60 00 06 00 00 00	Control Word=0x06 - Shutdown command. The motor decelerates to stop via the configured deceleration ramp, disables output, and engages the brake. Re-enablement (Switch On → Operation Enable) is required to resume control.
Rx	0x58B	60 40 60 00 00 00 00 00	
Tx	0x60B	2B 40 60 00 0F 01 00 00	Control Word=0x10F - Halt command. The motor decelerates to stop via the configured deceleration ramp but maintains output enablement. New positions can be updated using the 0x2F → Position → 0x3F sequence without re-enabling.
Rx	0x58B	60 40 60 00 00 00 00 00	