

GCAN-204

Modbus/RTU-CAN converter

User Manual



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1. Introduction

1.1 Overview

GCAN-204 converter has one CAN-Bus interface, one serial interface. The GCAN-204 integrates the Modbus RTU protocol. With the GCAN-204 , user can use the serial bus connect to other equipment (with Modbus RTU protocol) access the CAN-Bus communication interface.

GCAN-204 has integrated isolation protection module. Using DIN railway fixed, it can be easier to integrate into the control cabinet.

1.2 Properties at a glance

- Modbus slave support function code: 03H, 04H, 06H, 16H
- Serial baud rate: 600bps ~ 115200bps
- CAN-Bus supports CAN2.0A and CAN2.0B frame format, conform to ISO/DIS 11898 standards
- CAN baud rates: 5Kbps ~ 1Mbps
- CAN-Bus isolation module insulation voltage: DC 1500V
- Power supply: 9~30V (20mA, 24V DC)
- Interface using terminal blocks
- Installation method: DIN rail
- Working temperature range from -40 to 85 °C
- Size: (L)113mm * (W)100mm * (H)21mm

2. Installation

2.1 Installation and fixation

GCAN-204 can be installed on a DIN rail, as shown in figure 2.1.

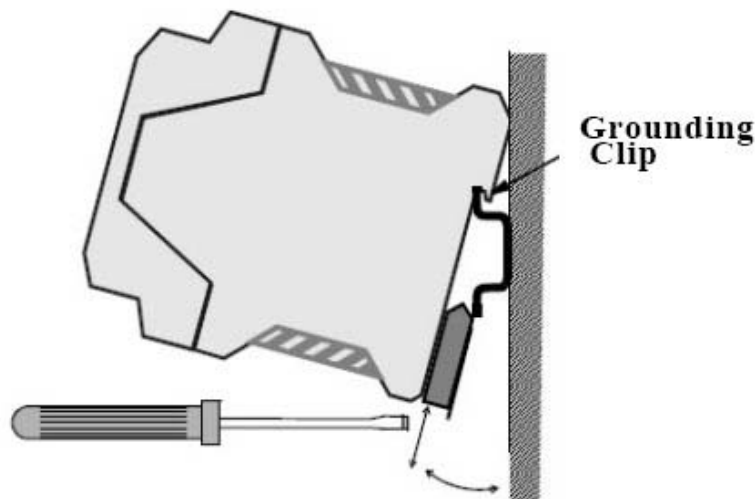


Figure 2.1 GCAN-204 module installation

Note: DIN rails require to connect with ground wire.

GCAN-204 power interface definition, as shown in table 2.1.

DC24V		explanation
1	+	24V DC+
2	-	0V
3	NC	NC
4	PE	shield

Table 2.1 Power interface definition

2.2 Connect to Serial bus

GCAN-204 serial interface use RS485 interface. The pin definitions are shown in table 2.2.

Pin	Port	Name	Features
C-BUS1	RS485	B-	485 B (-) signal line
C-BUS4		A+	485 A (+) signal line

Table 2.2 RS485 interface definitions

2.3 Connect to CAN-Bus

The pin definitions for the CAN side of GCAN-204 are shown in table 2.3.

Pin	Port	Name	Features
G	CAN	CAN-G	CAN_GND
L		CAN-L	CAN_L signal line
H		CAN-H	CAN_H signal line

Table 2.3 CAN-Bus signal assignment for GCAN-204

Only CAN_H and CAN_H connect with each other, then CAN_L and CAN_L connect with each other. Then we establish a connection.

3. Converter used

The working principle of GCAN-204, as shown in figure 3.1.

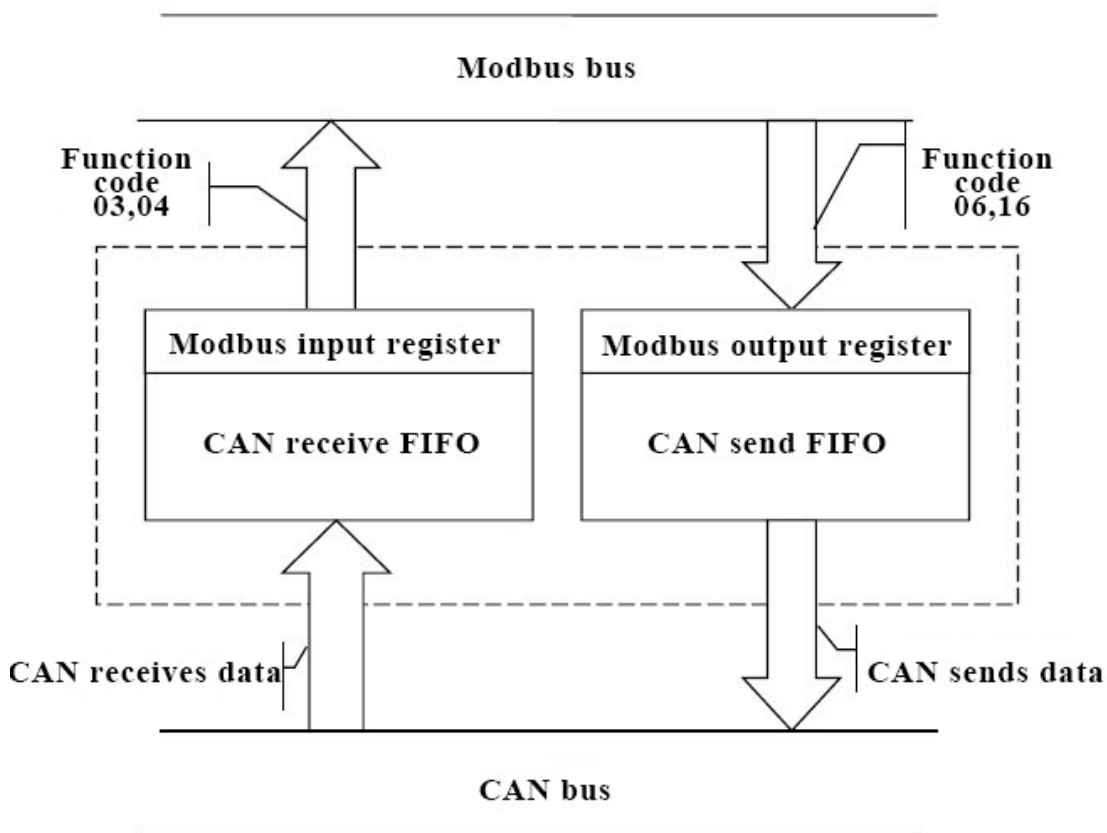


Figure 3.1 Working principle of GCAN-204

3.1 The structure of CAN-Bus

CAN-Bus connection, as shown in figure 3.2.

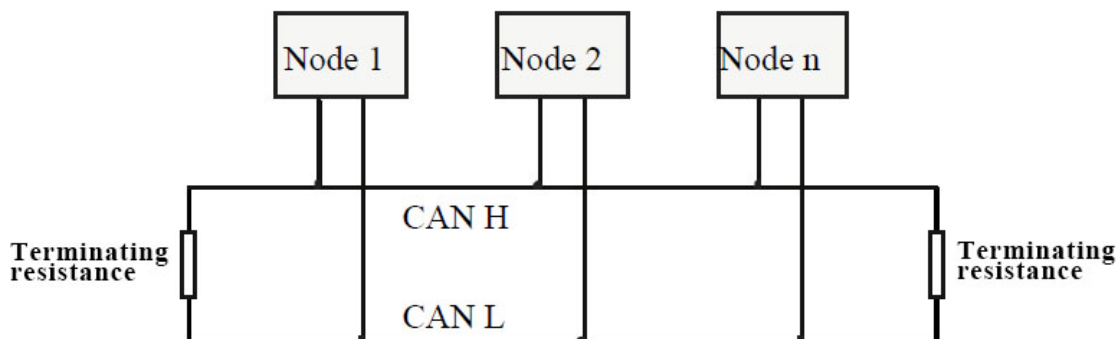


Figure 3.2 Topology structure of CAN-Bus

3.2 Termination resistor

CAN-Bus requires two 120Ω termination resistors in the furthest of the two terminals, as shown in figure 3.3.

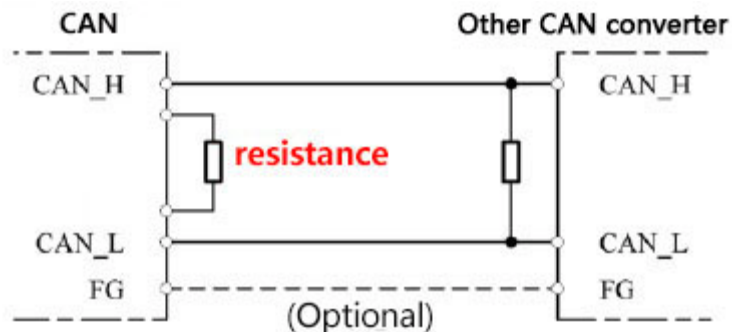


Figure 3.3 GCAN-204 connection to other CAN converter

Please note: You should connect the two ends of the resistor to CAN_L and CAN_H respectively.

3.3 Indicator light

GCAN-204 converter has one SYS indicator, one DAT indicator that can indicate the converter status. More functions are shown in table 3.2.

Indicator light	Status	Indicates the status
SYS	Blinking	Converter initialization, standby status
	OFF	Uninitialized
DAT	Blinking	Data transmission
	OFF	No data transmission

Table 3.2 Status of the GCAN-204 indicator

4. Configuration instructions

4.1 Configuration to prepare

Open the shell of the converter, find the DIP switch shown below, turn switch 2 to "ON", then connected to the power supply, you can enter the configuration mode.

Please note: GCAN-204 uses RS485 interface to configure, do not connect the "Mini USB" interface.



4.2 Connect the software

When GCAN-204 enters the configuration mode, use a RS485 line to connects to PC. Open the "ModbusRTU CAN Config" software, then configure the parameters. The software interface is shown in figure 4.1.



Figure 4.1 ModbusRTU CAN Config software initial interface

Select the serial number, click "Connect". After setting up the connection, click "读参数 Upload" to read the current configuration parameters, as shown in figure 4. 2.

Please note: At this point the converter has been connected with the PC, please do not click "Connect" repeatedly.

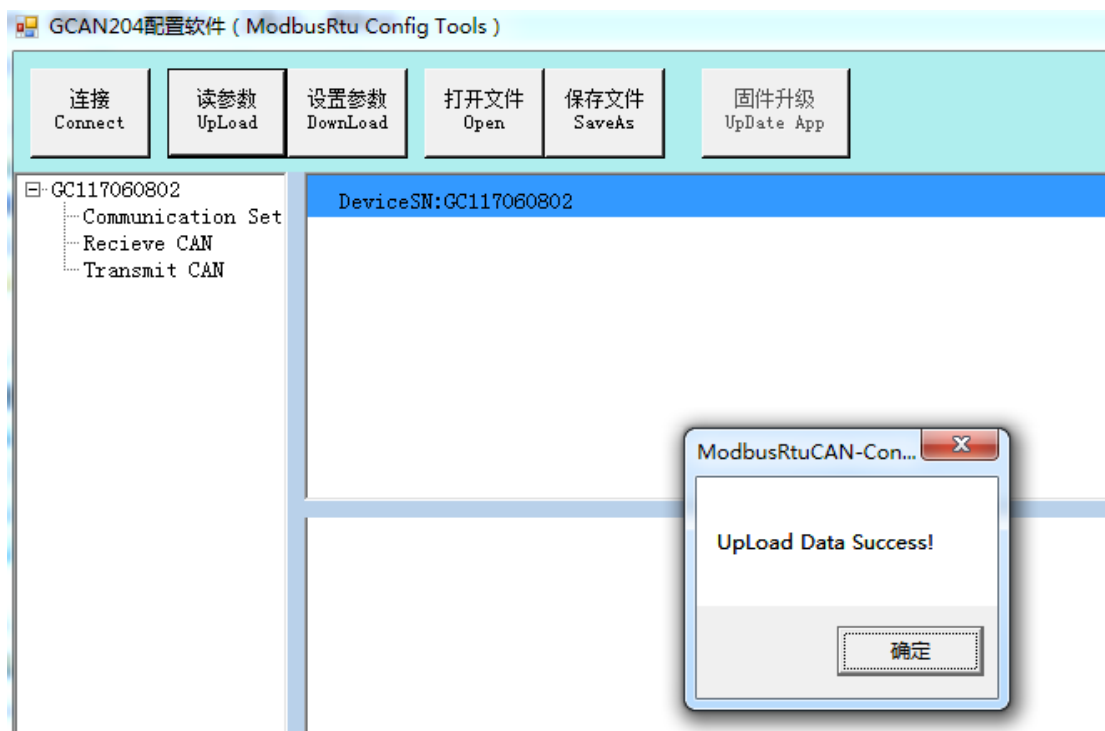


Figure 4.2 "ModbusRTU CAN Config" software main interface

4.3 Configure parameter

Click on "Communication Set".

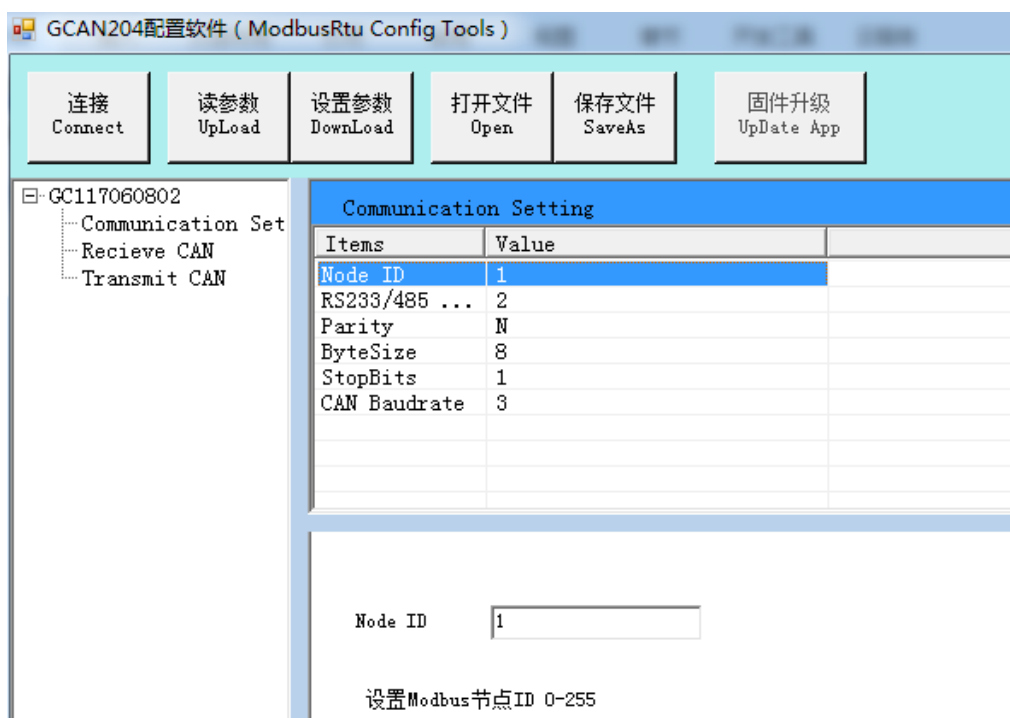


Figure 4.3 Configure the GCAN-204 basic operating parameters

In this interface, you can set:

[Product data sheet](#)

Node ID: The ID of the Modbus node

Parity: Odd parity or even parity

Byte Size: The length of the data

Stop Bits: Stop the number of bits

RS232 / 485 Baud: Modbus RTU baud rate

CAN Baudrate: CAN-Bus baud rate

Factory setting: Modbus RTU side baud rate is 57600bps, CAN baud rate is 250Kbps.

4.4 Configure mapping table

Press "Add" to add data. "Receive CAN" Modbus address: 0x00-0x7F, Modbus address of Transmit CAN: 0x100-0x17F.

4.4.1 Receive CAN

Click "Receive CAN", as shown in figure 4.4

COB-ID: Sets the frame ID of the CAN-Bus

Frame Format: Sets the frame format (Standard / Extended)

Frame Type: Sets the frame type (Data / RTR)

Modbus Address: Modbus register first address setting

Length: CAN frame data length, the maximum value of 8

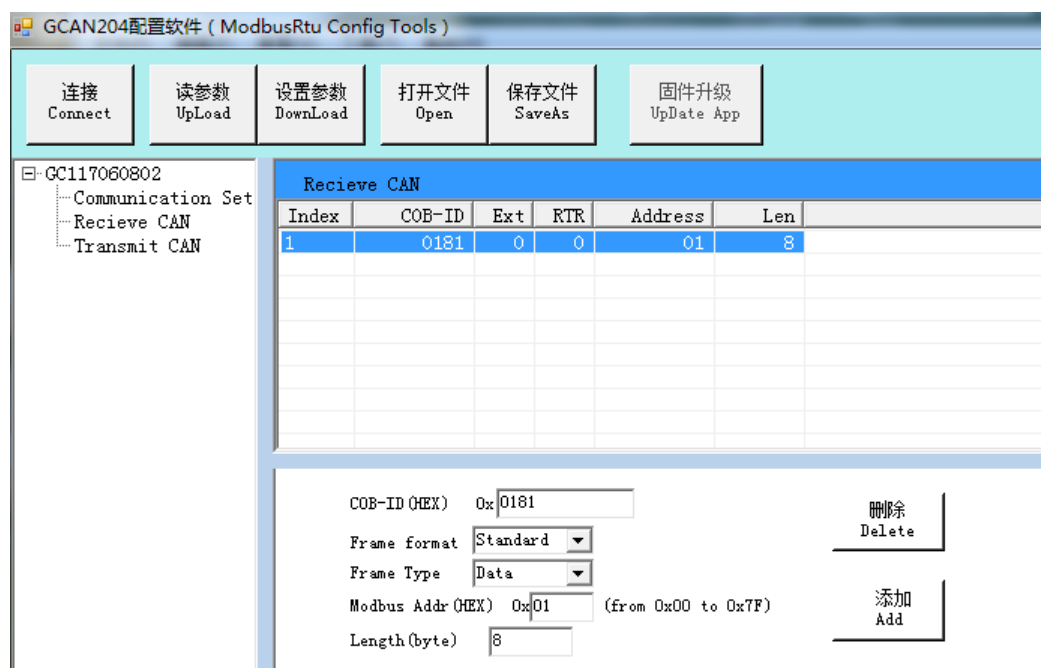


Figure 4. 4 Receive CAN mapping settings

4.4.2 Transmit CAN

Click "Transmit CAN" to add data mapping group, as shown in figure 4. 5.

COB-ID: Sets the frame ID to be forwarded to CAN-Bus data

Frame Format: Sets the frame format (Standard / Extended)

Frame Type: Sets the frame type (Data / RTR)

Modbus Address: Sets the Modbus terminal register's first address

Length: CAN frame data length, the maximum value is 8.

Set "Trace" or "Timer".

Trace: When a Modbus master sends a Modbus address data with a 06 instruction, if the data changes, it will trigger the corresponding CAN data transmission.

Timer: You can set the interval time, send CAN data circularly. It sets the interval in the "Send Timer", and enter the decimal number. The unit is milliseconds. For example, "enter 1000" can sent at intervals of 1000ms.

4.5 Download parameters

After the configuration is completed, click on"设置参数 Download", download the configuration data to the converter's "FLASH". If the download actions is unsuccessful, please download it again.

Please note: After the data is downloaded successfully, you need to set the No. 2 DIP switch to "OFF", and then restart the converter, to enable the new configuration.

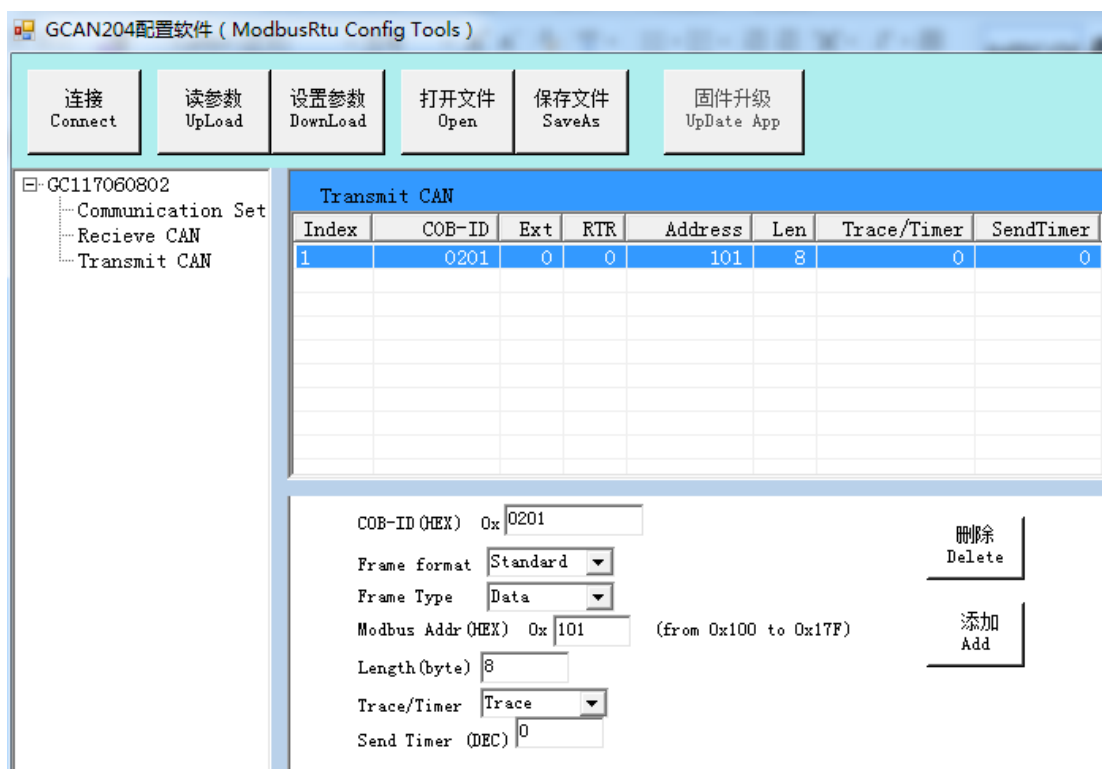


Figure 4. 5 Transmit CAN mapping settings

4.6 Save parameters

Save the configuration, click "保存文件 SaveAs" to save the parameters to the PC. Then the file can be used many times.

5. Examples

The user can use the included serial debugging assistant to send Modbus instruction debugging.

Please note: choose "hexadecimal display" and "hexadecimal send" when using the serial debugging assistant.

5.1 Receive CAN data

For example, configure the Modbus slave address: 1, Modbus register first address: 0x01, CAN: standard frame, frame ID: 0x181, CAN frame data: 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08.

User Modbus master sends request frame:

```
01 03 00 01 00 04 15 C9
```

GCAN-204 response frame:

```
01 03 08 02 01 04 03 06 05 08 07 17 C1
```

Please note that the CRC is calculated by the CRC16 checksum calculator. (With disk)

At this point, the GCAN-204 module has received a data frame with a frame ID of 0x181 from the CAN terminal of other equipment.

5.2 Transmit CAN data

For example, Modbus slave address: 1, Modbus register first address: 0x101 (decimal: 257), function code: 16 (10H), CAN: standard frame, frame ID: 0x201, CAN frame data: 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08.

User Modbus master sends request frame:

```
01 10 01 01 00 04 08 02 01 04 03 06 05 08 07 CB 2E
```

GCAN-204 response frame:

```
01 10 01 01 00 04 91 F6
```

Please note that the CRC is calculated by the CRC16 checksum calculator.

At this point, the CAN terminal of other equipment has received a data frame with a frame ID of 0x201 from the Modbus side of the GCAN-204 module.

6. Technical Specifications

Connection	
Serial interface	Terminal blocks
CAN interface	Terminal blocks
Interface characteristics	
Serial interface	Standard RS485 interface
Serial port baud rate	600bps~115200bps
CAN interface	ISO 11898 standard, CAN2.0A/B
CAN baud rate	1000K、500K、250K、200K、125K、100K、50K、20K
Electrical isolation	1500V, DC-DC
CAN termination resistor	None. You can add it between CAN_H and CAN_L if you need it.
Power supply	
Power supply voltage	+9~30V DC
Power supply current	Maximum 20mA(24V DC)
Environmental testing	
Working temperature	-40℃~+85℃
Working humidity	15%~90%RH, no condensation
EMC test	EN 55024:2011-09 EN 55022:2011-12
Protection grade	IP 20
The basic information	
Outline size	113mm *100mm *21mm
Weight	120g

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