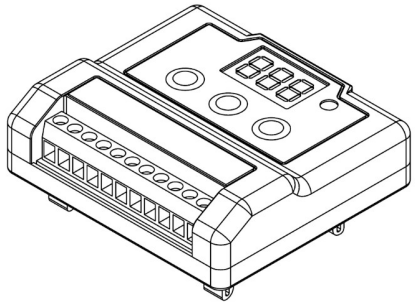
Proportional Controller Modbus RS485 User Manual

SY-DPCA-P-1 / SY-DPCA-C-1



1. Communication Parameters

The default Modbus RS485 communication parameters are as follows (some can be adjusted via the control panel):

Parameter	Settings	Remarks
Device Address	1(01h) ~ 247(F7h)	Default: **1**
Baud Rate	4800、9600、19200、38400、57600	Default: **19200**
Data Bits	8	Fixed
Parity	None (N)	Fixed
Stop Bits	1	Fixed
Protocol Mode	RTU	Fixed
Supported Function codes	**03h** (Read), **06h** (Write)	Others not supported

2. Register Address Table

The following Modbus registers are supported:

Register Address	Name	R/W	Description	Example	
				Decimal	HEX
0000H	Output Current	R	Unit: 0.01A (e.g., 67→0.67A)	67	0043h
0001H	Input Signal	R	Unit: 0.1% (e.g., 356→35.6%)	356	0164h
0002H	Device Status	R	0: Normal; 1: Current Signal Broken; 2: Overload; 3: Coil Open; 4: Coil Short	0	0000h
0003H	Signal Selection	R/W	0:0~10V (Default); 1:0~5V; 2:4~20mA; 3:RS485; 4: Panel Control	2	0002h
0004H	Enable Mode	R/W	0: Disabled (Default); 1: Enabled	0	0000h
0005H	Display Mode	R/W	0: Show Current (Default); 1: Show Input Signal; 2: No Display	0	0000h
0006H	485 Control Signal	R/W	0~100%, Unit: 1% (e.g., 80 → 80%)	80	0050h
0007H	Factory Reset	R/W	Write **5** to reset addresses 0003H~000DH to default values (Device Address and Baud Rate will be reset)	5	0005h
0008H	Max Current Setting	R/W	0~3.00A, Unit: 0.01A (e.g., 300 → 3.00A)	300	012Ch
0009H	Min Current Setting	R/W	0~1.00A, Unit: 0.01A (e.g., 100 → 1.00A)	100	0064h
000AH	Current Rise Time	R/W	0.1~5.0s, Unit: 0.1s (e.g., 50 → 5.0s)	50	0032h
000BH	Current Fall Time	R/W	0.1~5.0s, Unit: 0.1s (e.g., 10 → 1.0s)	10	000Ah
000CH	Dither Frequency	R/W	70~350Hz, Unit: 10Hz (e.g., 35 → 350Hz)	35	0023h
000DH	Dead Zone Setting	R/W	0~5%, Unit: 1% (e.g., 5 → 5%)	5	0005h

3. Error Handling

If an error occurs, the controller responds with:

1. **Error Types:**
   - Unsupported function code (e.g., 04h)
   - Invalid register address (e.g., 000EH out of range)
   - Data value out of range (e.g., writing 400 to 0008H)
   - For other errors such as CRC or frame length errors, controller will discard the message without responding.
2. **Error Response Format:**
   - Original function code **+128 (80h)**
   - Error code: **01h** (indicates the error type)
3. **Example:**
   - Host request 01 04 0008 0001 (invalid function code 04h)
   - Controller response 01 84 01 (84h = 80h + 04h, 01h = error code)

4. Communication Examples

Example 1: Reading Data

Read "Output Current (0000H)" and "Input Signal (0001H)" from device address 01h.

Host Request

01 03 0000 0002 C40B

- 01: Device address
- 03: Function code (Read)
- 0000: Start address (0000H)
- 0002: Read 2 registers
- C40B: CRC checksum

Controller Response

01 03 04 006E 0212 1A83

- 01: Device address
- 03: Function code (Read)
- 04: Byte count (4 bytes)
- 006E: 0000H value (0x006E = 110 → 1.10A)
- 0212: 0001H value (0x0212 = 530 → 53.0%)
- 1A83: CRC checksum

Example 2: Writing Data

Set "Vibration Frequency (000CH)" to 250Hz for device address 0Eh.

Host Request

0E 06 000C 0019 88FC

- 0E: Device address
- 06: Function code (Write)
- 000C: Target address (000CH))
- 0019: Value (0x0019 = 25 → 250Hz)
- 88FC: CRC checksum

Controller Response

0E 06 000C 0019 88FC

- Echoes the request to confirm successful write.

5. PC Communication Software

Using a USB-RS485 converter, you can operate and configure parameters via the PC software provided by our company.

Installation Guide

Step 1: Insert the converter into the USB port on the PC.

Step 2: Install the converter driver (only required for the first use).

Step 3: Connect the controller and the converter.

Step 4: Launch the PC software (download link: https://www.sunstaryuya.com.tw/downloads/).

Step 5: Follow the instructions within the software to proceed.

6. Notes

1. **Timeout**: Ensure **>10ms** idle time between messages.
2. **CRC Checksum**: Mandatory for all messages (use standard Modbus RTU CRC calculation).
3. **Address Range**: Only 0000H~000DH registers are valid.
4. All parameters configured through Modbus will be saved automatically.