



C-Lin 欣灵

使用说明书
Products Instructions

C-Lin

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CDAM4100 Series Remote I/O Module

Thank you very much for using C-Lin brand Remote I/O Modules. Please read the user manual before using the product.

27A00100

产品合格证

符合标准: _____

检验员: 检 05 _____

出厂日期: 见产品或包装 _____

本产品经检验合格, 准予出厂。

 欣灵电气股份有限公司
XINLING ELECTRIC CO., LTD

Preface

The CDAM4100 series remote I/O modules adopt the standard Modbus RTU protocol, enabling connection with PLCs and touch screens. They provide remote input/output signals for control systems.

This manual explains the usage methods, operation procedures, precautions, and other key information of the CDAM4100 series remote I/O modules. Please read this manual thoroughly before using the product and keep it in a safe place for future reference.

For the safety of operators and mechanical equipment, installation, commissioning, and parameter adjustment must be carried out by professional personnel. Please pay close attention to sections marked with symbols such as **[WARNING]** and **[CAUTION]** in this manual. If you have any questions or concerns, please contact our technical service department.

■ Meaning of Symbols

To prevent harm to personnel and damage to equipment, and to eliminate potential hazards, this manual classifies the mandatory compliance items as follows:



WARNING

This symbol indicates that ignoring it and operating incorrectly will result in personal injury.



CAUTION

This symbol indicates that ignoring it and operating incorrectly will result in property damage (e.g., product malfunction).

NOTE

This symbol indicates a warning against operations that are prone to error.

■ General Precautions

- ◆Before starting work and operation, confirm that the product's functions and performance are normal before putting it into use.
- ◆A safety circuit should be configured using a method that does not rely on the programmable controller (PLC). This ensures that even if the PLC fails, the entire system can be moved to a safe location starting from the fail-safe point.
- ◆Note: The functionality and performance of products used outside of standard specifications or modified cannot be guaranteed.
- ◆When using our products in combination with other products, their functionality and performance may not meet requirements depending on usage conditions and the environment. Please use them after thorough evaluation.
- ◆Do not use this product for purposes such as protecting human bodies.

■ CAUTION

When using the product under the following conditions and environments, safety measures such as redundant usage methods for rated values and functions, and fail-safe protection must be adopted. Please also contact our sales department.

- ◆Before starting work and operation, confirm that the product's functions and performance are normal before putting it into use.
- ◆When used for nuclear power plant control, railway facilities, aviation facilities, vehicles, combustion equipment, medical devices, amusement facilities, safety equipment, etc.
- ◆When it has a significant impact on personal life and property and requires special safety provisions.

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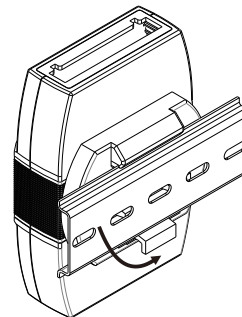
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Chapter 1 Installation and Operation

■ Mounting on DIN Rail

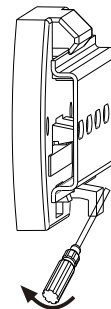
Mounting Procedure

Hook the CDAM4100 series remote I/O module onto the DIN rail and press down firmly until you hear a "click" sound, which confirms the module is securely locked in place.

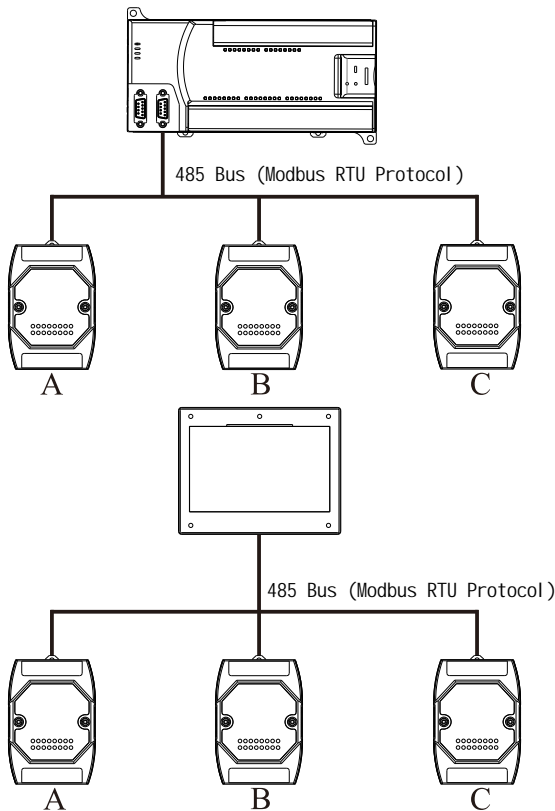


Removal Procedure

First, remove the screws on both sides of the module and lift it off the rail. Then, insert a screwdriver into the position shown in the diagram and pry outward in the indicated direction to release the module.



■ Communication Status



Chapter 2 Technical Specifications of Each I/O Module

Technical Specifications

CDAM4101 Remote I/O Module

Operating Voltage		DC21.6~26.4V
Power Consumption		<3W
485	Interface Type	Plug-In Terminal Block
	Protocol Type	Modbus RTU(Addresses Base1)
	Transmission Distance	<1200m
Digital Channels	Communication Baud Rate	1200bps-115200bps
	Contact Capacity	Transistor Output Type: 0.2A / 30VDC
Number of Channels		16 Output Channels
Dimensions		103×72×34.5mm
Mounting Method		Standard 35mm U-type DIN Rail Mounting
Operating Environment		Ambient Temperature: -10~40°C, Humidity: ≤90% RH (Non-condensing)

CDAM4102 Remote I/O Module

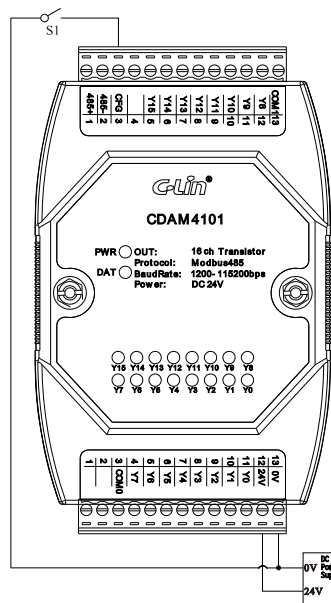
Operating Voltage		DC21.6~26.4V
Power Consumption		<3W
485	Interface Type	Plug-In Terminal Block
	Protocol Type	Modbus RTU(Addresses Base1)
	Transmission Distance	<1200m
Digital Channels	Communication Baud Rate	1200bps-115200bps
	Number of Channels	16 Input Channels
Dimensions		103×72×34.5mm
Mounting Method		Standard 35mm U-type DIN Rail Mounting
Operating Environment		Ambient Temperature: -10~40°C, Humidity: ≤90% RH (Non-condensing)

CDAM4103 Remote I/O Module

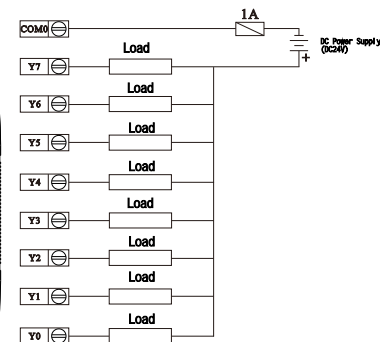
Operating Voltage		DC21.6~26.4V
Power Consumption		<3W
485	Interface Type	Plug-In Terminal Block
	Protocol Type	Modbus RTU(Addresses Base1)
	Transmission Distance	<1200m
	Communication Baud Rate	1200bps-115200bps
Digital Channels	Contact Capacity	Relay Output Type: 1A / 250VAC Transistor Output Type: 0.2A / 30VDC
	Number of Channels	8 Input Channels, 8 Output Channels
Dimensions		103×72×34.5mm
Mounting Method		Standard 35mm U-type DIN Rail Mounting
Operating Environment		Ambient Temperature: -10~40°C, Humidity: ≤90% RH (Non-condensing)

Terminal Layout and Wiring for CDAM4100 Series

● CDAM4101 Terminal Layout



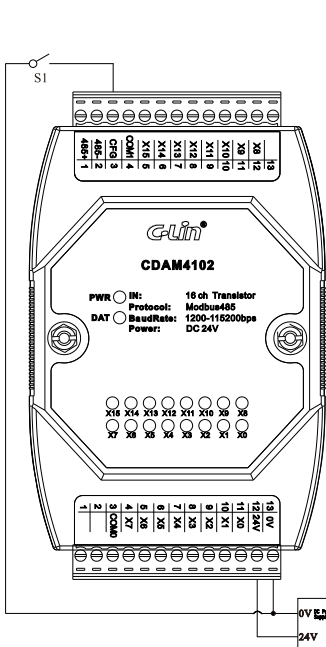
● CDAM4101 Output Wiring Diagram



Transistor Output

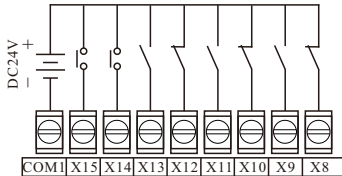
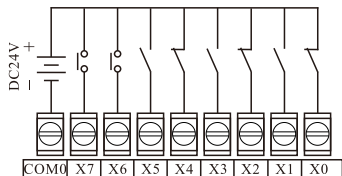
Notes: 1. Y0-Y15 are open-collector outputs with an integrated freewheeling diode.
 2. Only DC loads are supported for this output type.
 3. For the wiring configuration at the CFG position (as shown in the diagram), press and hold the S1 switch until the DAT indicator flashes, then release S1 to restore the module to its factory default settings.

● CDAM4102 Terminal Layout

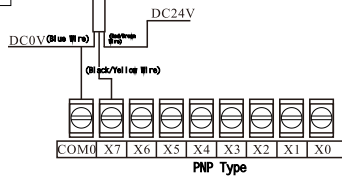
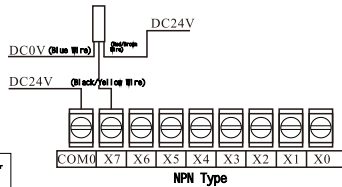


Note : For the wiring configuration at the CFG position (as shown in the diagram), press and hold the S1 switch until the DAT indicator flashes, then release the S1 switch to restore the module to its factory default settings.

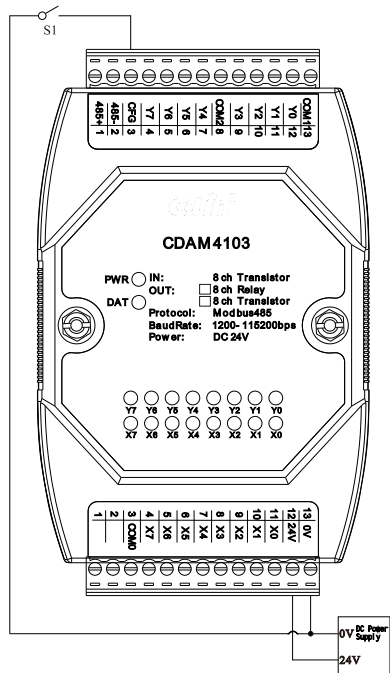
● CDAM4102 Input Wiring Diagram



● NPN Sensor Input Wiring and PNP Sensor Input Wiring

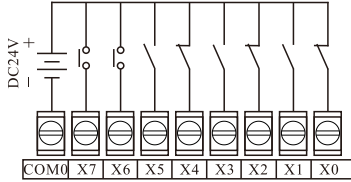


● CDAM4103 Terminal Layout

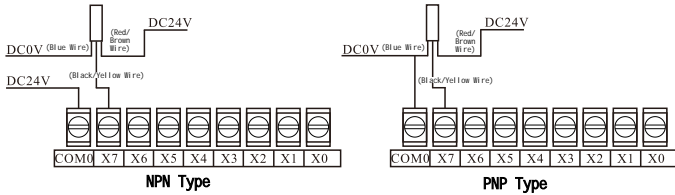


Notes : 1. Transistors Y0-Y7 are open-collector outputs with an integrated freewheeling diode.
 2. Only DC loads are supported for this output type.
 3. For the wiring configuration at the CFG position (as shown in the diagram), press and hold the S1 switch until the DAT indicator flashes, then release S1 to restore the module to its factory default settings.

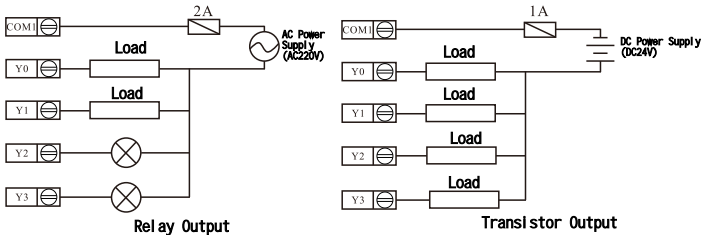
● Contact Signal Input Wiring Diagram



● NPN Sensor Input Wiring and PNP Sensor Input Wiring



● Output Wiring Diagram



CDAM-4101 Register Address Description

Col I Register Address (Decimal)	Function Description	Read/Write	Remarks
17	Output Channel Y0	Read/Write	A non-zero register value indicates the output is active. Supports function codes 01, 05, 15
18	Output Channel Y1	Read/Write	
19	Output Channel Y2	Read/Write	
20	Output Channel Y3	Read/Write	
21	Output Channel Y4	Read/Write	
22	Output Channel Y5	Read/Write	
23	Output Channel Y6	Read/Write	
24	Output Channel Y7	Read/Write	
25	Output Channel Y8	Read/Write	
26	Output Channel Y9	Read/Write	
27	Output Channel Y10	Read/Write	
28	Output Channel Y11	Read/Write	
29	Output Channel Y12	Read/Write	
30	Output Channel Y13	Read/Write	
31	Output Channel Y14	Read/Write	
32	Output Channel Y15	Read/Write	

CDAM-4102 Register Address Description

Discrete Register Address (Decimal)	Input Address	Function Description	Read/Write	Remarks
01		Input Channel X0	Read Only	Input is active when the register value is non-zero. Supports function code 02.
02		Input Channel X1	Read Only	
03		Input Channel X2	Read Only	
04		Input Channel X3	Read Only	
05		Input Channel X4	Read Only	
06		Input Channel X5	Read Only	
07		Input Channel X6	Read Only	
08		Input Channel X7	Read Only	
09		Input Channel X8	Read Only	
10		Input Channel X9	Read Only	
11		Input Channel X10	Read Only	
12		Input Channel X11	Read Only	
13		Input Channel X12	Read Only	
14		Input Channel X13	Read Only	
15		Input Channel X14	Read Only	
16		Input Channel X15	Read Only	

CDAM-4103 Register Address Description

Discrete Register Address (Decimal)	Input Address	Function Description	Read/Write	Remarks
01		Input Channel X0	Read Only	A non-zero register value indicates a valid input. Supports function code 02.
02		Input Channel X1	Read Only	
03		Input Channel X2	Read Only	
04		Input Channel X3	Read Only	
05		Input Channel X4	Read Only	
06		Input Channel X5	Read Only	
07		Input Channel X6	Read Only	
08		Input Channel X7	Read Only	
Coll Register Address (Decimal)	Function Description	Read/Write	Remarks	
17	Output Channel Y0	Read/Write	A non-zero register value indicates the output is active. Supports function codes 01, 05, 15	
18	Output Channel Y1	Read/Write		
19	Output Channel Y2	Read/Write		
20	Output Channel Y3	Read/Write		
21	Output Channel Y4	Read/Write		
22	Output Channel Y5	Read/Write		
23	Output Channel Y6	Read/Write		
24	Output Channel Y7	Read/Write		

CDAM4100 Series Register Address Description

Holding Register Address	Function Description	Read/Write	Remarks
210	Module Identification	Read/Write	Can be rewritten, but will restore to the corresponding module model after reset
211	Reserved	Read/Write	
212	Reserved	Read/Write	
213	Error Indication	Read/Write	
214	Restore Factory Settings	Read/Write	
215	Data Save	Read/Write	
216	Data Save Success Flag	Read/Write	
217	Filter Constant 0	Read/Write	Filter Constants for Discrete Input Signals
218	Filter Constant 1	Read/Write	
219	Filter Constant 2	Read/Write	
220	Filter Constant 3	Read/Write	
221	Filter Constant 4	Read/Write	
222	Filter Constant 5	Read/Write	
223	Filter Constant 6	Read/Write	

Holding Register Address	Function Description	Read/Write	Remarks	
224	Filter Constant 7	Read/Write	Filter Constants for Discrete Input Signals	
225	Filter Constant 8	Read/Write		
226	Filter Constant 9	Read/Write		
227	Filter Constant 10	Read/Write		
228	Filter Constant 11	Read/Write		
229	Filter Constant 12	Read/Write		
230	Filter Constant 13	Read/Write		
231	Filter Constant 14	Read/Write		
232	Filter Constant 15	Read/Write		
233	485 Communication Baud Rate	Read/Write		Default Baud Rate: 9600 bps
234	485 Parity Mode	Read/Write		Default Parity Mode: Even Parity
235	485 Slave Address	Read/Write	Address Range: 1-247 (Default Address: 1)	
236	Communication Configuration Password	Read/Write	Default Password: 1234 (Hexadecimal)	
237	Factory Reset Password	Read/Write	Default Password: 1234 (Hexadecimal)	

Example of Communication Data Format

Note: The module's default serial port parameters are 9600 bps / 8 data bits / Even parity / 1 stop bit. Since the module's Modbus RTU protocol uses a 1-based starting address, you must subtract 1 from the register address during actual operations. For example, Output Channel Y0 at address 17 corresponds to the actual address 0x0010.

1. Read Output Coil Register Status

This is an example of reading the status of output coils (Y0-Y7) at register addresses 17-24.

Host Transmission	(Hexadecimal)	Slave Response	(Hexadecimal)
Slave Address	01	Slave Address	01
Function Code	01	Function Code	01
Starting Address Hi	00	Byte Count	01
Starting Address Lo	10	Output Status 24-17	00
Output Quantity Hi	00	Checksum Hi	51
Output Quantity Lo	08	Checksum Lo	88
Checksum Hi	3C		
Checksum Lo	09		

Notes : For the CDAM4101 (16-channel output) module, the output coil register addresses are 17-32.
 For the CDAM4102 (16-channel input) module, output coil register addresses 17-32 are not applicable.
 For the CDAM4103 (8-channel input, 8-channel output) module, output coil register addresses are 17-24; addresses 25-32 are not applicable.

2. Read Discrete Input Register Status

This is an example of reading the status of discrete inputs (X0-X7) at register addresses 1-8.

Host Transmission	(Hexadecimal)	Slave Response	(Hexadecimal)
Slave Address	01	Slave Address	01
Function Code	02	Function Code	02
Starting Address Hi	00	Byte Count	01
Starting Address Lo	00	Output Status 8-1	00
Output Quantity Hi	00	Checksum Hi	A1
Output Quantity Lo	08	Checksum Lo	88
Checksum Hi	79		
Checksum Lo	CC		

Notes : For the CDAM4101 (16-channel output) module, the output coil register addresses are 17-32.
 For the CDAM4102 (16-channel input) module, output coil register addresses 17-32 are not applicable.
 For the CDAM4103 (8-channel input, 8-channel output) module, output coil register addresses are 1-8; addresses 9-16 are not applicable.

Chapter 4 Communication Data Format

3. Read Holding Register Status

This is an example of reading the status of holding registers at addresses 210-237.

Host Transmission	(Hexadecimal)	Slave Response	(Hexadecimal)
Slave Address	01	Slave Address	01
Function Code	03	Function Code	03
Starting Address Hi	00	Byte Count	38
Starting Address Lo	D1	Register Value Hi (210)	41
Register Quantity Hi	00	Register Value Lo (210)	01
Register Quantity Lo	1C
Checksum Hi	14	Register Value Hi (233)	00
Checksum Lo	3A	Register Value Lo (233)	03
		Register Value Hi (234)	00
		Register Value Lo (234)	02
		Register Value Hi (235)	00
		Register Value Lo (235)	01
		Register Value Hi (236)	00
		Register Value Lo (236)	00
		Register Value Hi (237)	00
		Register Value Lo (237)	00
		Checksum Hi	3E
		Checksum Lo	88

Chapter 4 Communication Data Format

Note 1: For the CDAM4101 (16-channel output) module, the holding register address 210 corresponds to 4101 (Hex).

For the CDAM4102 (16-channel input) module, the holding register address 210 corresponds to 4102 (Hex).

For the CDAM4103 (8-channel input, 8-channel output) module, the holding register address 210 corresponds to 4103 (Hex).

This register value is used for device identification and must not be modified by the user.

Note 2: The Error Indication register (address 213) has a value of 0000 under normal conditions.

When data saving or factory reset fails due to a password error, the register value will be 0001 (Hex).

Note 3: To perform a factory reset:

First set the Factory Reset Password register (address 237) to 1234 (Hex). Then set the Restore Factory Settings register (address 214) to 0001 (Hex).

```
// Set Factory Reset Password register to 1234 (Hex)
```

```
Transmit command: 01 06 00 EC 12 34 45 48
```

```
Receive response: 01 06 00 EC 12 34 45 48
```

```
// Enable Factory Reset
```

```
Transmit command: 01 06 00 D5 00 01 59 F2
```

```
Receive response: 01 06 00 D5 00 01 59 F2
```

Note 4: Filter Constant Registers 0-15 (addresses 217-232) correspond to the filtering settings for discrete inputs X0-X15, respectively. The setting value ranges from 0000 to FFFF (Hex). For example, setting Filter Constant Register 0 to 000A (Hex) means the discrete input X0 channel will filter out signals shorter than 10 ms.

```
// Set Filter Constant Register 0 to 000A (Hex). The filter takes effect immediately after setting.
```

```
Transmit command: 01 06 00 D8 00 0A 89 F6
```

```
Receive response: 01 06 00 D8 00 0A 89 F6
```

Chapter 4 Communication Data Format

```
// Set Communication Configuration Password
Transmit command: 01 06 00 EB 12 34 F4 89
Receive response: 01 06 00 EB 12 34 F4 89
```

```
// Enable Data Save (Data will be retained after saving)
Transmit command: 01 06 00 D6 00 01 A9 F2
Receive response: 01 06 00 D6 00 01 A9 F2
```

For the CDAM4101 (16-channel output) module, Filter Constant Registers are not applicable.

For the CDAM4102 (16-channel input) module, Filter Constant Registers are at addresses 217-232.

For the CDAM4103 (8-channel input, 8-channel output) module, Filter Constant Registers are at addresses 217-224; addresses 225-232 are not applicable.

Note 5: Data Save: To save your configured parameters: First set the Communication Configuration Password register (address 236) to 1234 (Hex). Then set the Data Save register (address 215) to 0001 (Hex). If the data save is successful, the Data Save Success Flag register (address 216) will automatically be set to 0001 (Hex). If the data save fails, the Error Indication register (address 213) will be set to 0001 (Hex).

Note 6: Communication Parameter Modification:

Address 233: 485 Communication Baud Rate Register (Hex)	Baud Rate (bps)
0000	1200
0001	2400
0002	4800
0003	9600
0004	19200

Chapter 4 Communication Data Format

0005	38400
0006	57600
0007	115200
Other values	9600

Address 234: 485 Parity Mode Register (Hex)	Parity Mode
0000	No Parity
0001	Odd Parity
0002	Even Parity
Other values	Even Parity

Example:

Change the slave address from 01 and serial port parameters from 9600 bps / 8 data bits / Even parity / 1 stop bit to slave address 05 and serial port parameters 115200 bps / 8 data bits / No parity / 2 stop bits.
(The Modbus RTU protocol specifies the length of the data frame, so 2 stop bits are required when no parity is used.)

```
// Modify Baud Rate, Parity Mode, Slave Address, and set Communication Configuration Password
Transmit command: 01 10 00 E8 00 04 08 00 07 00 00 00 05 12 34 BE ED
Receive response: 01 10 00 E8 00 04 41 FE
```

```
// Enable Data Save (Data will be retained after saving)
Transmit command: 01 06 00 D6 00 01 A9 F2
Receive response: 01 06 00 D6 00 01 A9 F2
```

After receiving this command, the module will communicate using the new serial port parameters: 115200 bps / 8 data bits / No parity / 2 stop bits, with slave address 05.

Chapter 4 Communication Data Format

4. Write Output Coil Register

This is an example of writing to turn ON the Output Coil (Y0) register at address 17.

Host Transmission	(Hexadecimal)	Slave Response	(Hexadecimal)
Slave Address	01	Slave Address	01
Function Code	05	Function Code	05
Starting Address Hi	00	Starting Address Hi	00
Starting Address Lo	10	Starting Address Lo	10
Output Value Hi	FF	Output Value Hi	FF
Output Value Lo	00	Output Value Lo	00
Checksum Hi	8D	Checksum Hi	8D
Checksum Lo	FF	Checksum Lo	FF

This is an example of writing to turn OFF the Output Coil (Y0) register at address 17.

Host Transmission	(Hexadecimal)	Slave Response	(Hexadecimal)
Slave Address	01	Slave Address	01
Function Code	05	Function Code	05
Starting Address Hi	00	Starting Address Hi	00
Starting Address Lo	10	Starting Address Lo	10
Output Value Hi	00	Output Value Hi	00
Output Value Lo	00	Output Value Lo	00
Checksum Hi	CC	Checksum Hi	CC
Checksum Lo	0F	Checksum Lo	0F

Chapter 4 Communication Data Format

5. Write Multiple Output Coil Registers

This is an example of writing to turn ON multiple Output Coils (Y0-Y7) registers at addresses 17-24.

Host Transmission	(Hexadecimal)	Slave Response	(Hexadecimal)
Slave Address	01	Slave Address	01
Function Code	0F	Function Code	0F
Starting Address Hi	00	Starting Address Hi	00
Starting Address Lo	10	Starting Address Lo	10
Output Quantity Hi	00	Output Quantity Hi	00
Output Quantity Lo	08	Output Quantity Lo	08
Byte Count	01	Checksum Hi	55
Output Value	FF	Checksum Lo	C8
Checksum Hi	7F		
Checksum Lo	16		

This is an example of writing to turn OFF multiple Output Coils (Y0-Y7) registers at addresses 17-24.

Host Transmission	(Hexadecimal)	Slave Response	(Hexadecimal)
Slave Address	01	Slave Address	01
Function Code	0F	Function Code	0F
Starting Address Hi	00	Starting Address Hi	00
Starting Address Lo	10	Starting Address Lo	10
Output Quantity Hi	00	Output Quantity Hi	00
Output Quantity Lo	08	Output Quantity Lo	08

Byte Count	01	Checksum Hi	55
Output Value	00	Checksum Lo	C8
Checksum Hi	3F		
Checksum Lo	56		

Chapter 5 Outline Dimensions Drawing

Outline Dimensions Drawing

CDAM4100 series remote I/O module unit

■ CDAM4100 Series Remote I/O Module

