

HCA8C-C24-ADP User' Manual

1. Overview

HCA8C-C24-ADP is built in two communication ports, which can be configured to RS485 (half duplex two-wire) or RS232 by

dial switch. It is completely isolated between the ports and the PLC.

2. Specifications

2.1 Terminal layout



2.2 Wiring

1. Wiring of communication terminals

Terminal 485-A is connected to Place A of other 485 device.

Terminal 485-B is connected to Place B of other 485 device.

GND is connected to the GND of other device.

Terminal 232-TX is connected to the RX of other 232 device.

Terminal 232-RX is connected to the TX of other 232 device.

GND is connected to the GND of other device.

GND must be connected if communicated with the 232 device.



- To connect to HCA8, HCA8C series PLC
- 1. When external power supply used

2. When 24VDC on PLC used



Cautions for wiring

• Ground the " $\frac{1}{2}$ " terminal to a class-D grounded power supply line (100 Ω or less) together with the grounding terminal of the PLC main unit.

• When using an external power supply, please refer to the related manual of PLC to be connected for the timing of power ON/OFF.

2.3 Communication specifications

Items		RS232	RS485	Note
The number of occupied channels		1 channel		Either MODBUS master or slave station
				occupies 1 channel.
Communic	Transmission speed	300,600,1200,2400,4800,		See communication format
ation spec.	ation spec. 9600,19200,38400,57600,115200 bps			
	Data length	7 or 8 bits		
	Stop bit	1 or 2 bits		
	Transmission	Max. 15m	Max. 500m	Depending on communication device
	distance			type
	Communication	RTU or ASCII		
	protocol			
Master	Number of slaves	1 16		Depending on communication device
function				type
	Number of functions	14 (+14 diagnostic fu	nctions)	
	Number of written	123 words or 1968 co	oils	
	data			
	Number of read	125 words or 2000 coils		
	data			
	Number of	1 command		
	commands given at			



	the same time		
Slave	Number of functions	14 (+14 diagnostic functions)	
function	Number of slaves	1 to 247	
	Number of request	1 request	
	received at the		
	same time		

3. Communication configuration

Three communication modes can be set by the dial switch. Please configure the dial switch before power ON and following the

instructions below strictly.

3.1



0100 00XX

Default configuration: 0100 0011

The seventh: X=0, the terminal resistor of channel 1 (120Ω) is ON. X=1, OFF.

The eighth: X=0, the terminal resistor of channel 2 - (120 Ω) is ON. X=1, OFF.

Select to open the terminal resistor according to the actual situation. The terminal resistor is OFF by default when leaving the factory.

The ports status for 2 channels is RS485 (half-duplex, two-wire)

3.2



The ports status for 2 channels is RS232.

3.3



The eighth: X=0, the terminal resistor of channel 2 (120Ω) is ON. X=1, OFF.

Select to open the terminal resistor according to the actual situation. The terminal resistor is OFF by default when leaving the factory.

Now, channel 1 (COM1) is RS232, channel 2 (COM2) is RS485 (half-duplex, two-wire)



4. Communication function

4.1 Programming communication function

Port 232 can be used as the common communication port to have the programming communication with PC programming

software, HMI etc. Please clear the PLC internal data, and them write the programs before using this function.

Note: Port 485 has no this function.

4.2 Non-programming communication function

Nom-programming communication function contains N:N network, Parallel link, Computer link, Non-protocol communication

(RS, RS2 instruction) and MODBUS master-slave protocol.

Please make sure whether to use the devices of communication format (D8120, D8400, D8420), N:N network (D8176 to

D8180) and parallel link (M8070, M8071) in Sequence Control. If the devices are used, it cannot communicate normally.

If other functions are needed, refer to Special function register.

Channel 1: D8400 to D8419, D8470 to D8485

Channel 2: D8420 to D8439, D8470 to D8485

5. Communication methods by sequence control program

The method of taking sequence control is to send data to communication format (D8120, D8400, D8420) and make the settings. Here explains the setting method of related devices and sequence control.

5.1 Communication setting by RS instruction

The used device in communication setting is shown below.

1. D8120 (communication format)

You can make the communication setting, such as data length, parity check, baud rate in D8120.

The setting of D8120 is shown below.

Bit	Name	Contents					
No.		0 (bit = OFF)		1 (bit = ON)			
b0	Data length	7-bit		8-bit			
b1	Parity	b2, b1					
b2		(0, 0): No parity					
		(0, 1): Odd					
		(1, 1): Even					
b3	Stop bit	1-bit		2-bit			
b4	Baud rate (bps)	b7, b6, b5, b4	b7, b6,	b5, b4	b7, b6, b5, b4		
b5		(0, 0, 1, 1): 300	(0, 1, 1	, 1): 4800	(1, 0, 1, 1): 57600		
b6		(0, 1, 0, 0): 600	(1, 0, 0	, 0): 9600	(1, 1, 0, 0): 115200		
b7		(0, 1, 0, 1): 1200	(1, 0, 0	, 1): 19200)		
		(0, 1, 1, 0): 2400	(1, 0, 1	, 0): 38400)		
b8	Header	None		D8124	Initial value: STX(02H)		
b9	Terminator	None	-	D8125	Initial value: ETX(03H)		
b10	Control line	Non-protocol	b11, b10				
b11			(0, 0): None <rs-232< td=""><td>C interface</td><td>?></td></rs-232<>	C interface	? >		
			(0, 1): Normal mode <	<rs-232c interface=""></rs-232c>			
		(1, 0): Interlink mode		RS-232C interface>			
			(1, 1): MODEM mode				
			<rs-232c i<="" interface,="" td=""><td colspan="4">RS-485/RS-422 interface^{*2}></td></rs-232c>	RS-485/RS-422 interface ^{*2} >			



		Computer link	b11, b10		
			(0, 0): RS-485/RS-422 interface		
			(1, 0): RS-232C interf	ace	
b12	Not used				
b13 ^{*1}	Sum check	No check		Added	
b14 ^{*1}	Protocol	No protocol		Dedicated protocol	
b15 ^{*1}	Sequence	Format 1		Format 4	

*1: Make sure to use non-protocol communication in '0".

*2: If using RS-485/RS-422 interface, they can only be used in HCA8 and HCA8C.

The program is shown as follows:



Data length	7-bit
Parity	Even
Stop bit	1-bit
Baud rate	9600bps
Protocol	No protocol
Header	None
Terminator	None
Control line	MODEM mode

5.2 Communication setting of RS2 instruction

The used devices are shown as follows:

When using the communication port of channel 0, make the setting in D8370.

When using the communication port of channel 1, make the setting in D8400.

When using the communication port of channel 2, make the setting in D8420.

1. D8370, D8400, D8420 (communication format)

You can make the communication setting, such as data length, parity check, baud rate in communication format..

The setting is shown as follow.					
Bit	Name	Contents			
No.		0 (bit = OFF)	1 (bit = ON)		
b0	Data length	7-bit	8-bit		
b1	Parity	b2, b1			
b2		(0, 0): No parity			
		(0, 1): Odd			



		(1, 1): Even				
b3	Stop bit	1-bit			2-bit	
b4 b5 b6 b7	Baud rate (bps)	b7, b6, b5, b4 (0, 0, 1, 1): 300 (0, 1, 0, 0): 600 (0, 1, 0, 1): 1200	b7 (0, (1, (1,	, b6, , 1, 1 , 0, 0 , 0, 0	b5, b4 ,1): 4800 ,0): 9600 ,1): 19200	b7, b6, b5, b4 (1, 0, 1, 1): 57600 (1, 1, 0, 0): 115200
		(0, 1, 1, 0): 2400	(1,	, 0, 1	,0): 38400	
b8	Header	None			Provided*2	
b9	Terminator	None			Provided*2	
b10	Control line	Non-protocol	b12, b11, b10			
b11			(0, 0, 0): None <f< td=""><td>RS-2</td><td>32C interface></td><td></td></f<>	RS-2	32C interface>	
b12			(0, 0, 1): Normal	mode	e <rs-232c interface=""></rs-232c>	
			(0, 1, 0): Interlink	mod	e <rs-232c interface=""></rs-232c>	
			(0, 1, 1): MODEN	/ moo	de <rs-232c interface=""></rs-232c>	
			(1, 1, 1): RS-485	com	munication < RS-485/RS-	422 interface>
b13	Sum check	No check			Added*3	
b14*1	Protocol	No protocol			Dedicated protocol	
b15	Sequence control (CR, LF)	Without using CR, L	F (Format 1)		Using CR, LF (Format 4)

*1: Make sure to use non-protocol communication in '0".

*2: Max. 4 headers and terminators can be set in RS2 instruction.

*3: When executing non-protocol communication in RS2 instruction, sum check should be added after the terminator.

Terminator must be set when adding sum check.

The program is shown as follows:

M 8002	F	NC 12 MOV	H 1(C 86	D 8400]	
D 8120 =	ь15 [0001 1 1	l 100 C	1000 (8)110 6	b]	0	
Data length	7-bit						

Data length	7-bit
Parity	Even
Stop bit	1-bit
Baud rate	9600bps
Protocol	No protocol
Header	None
Terminator	None
Control line	RS-485 communication



6. External dimensions, part names and terminal layout



[1] DIN rail mounting groove (DIN rail: DIN46277)

[2] Name plate

[3] Special adapter slide lock:

Used to connect additional special adapters onto left side of this special adapter.

[4] Special adapter connector cover:

Remove this cover to connect additional special adapters on the left side.

[5] Direct mounting hole:2 holes of φ 4.5 (0.18") (mounting screw: M4 screw)

Not used when connecting to TX3UCSeries PLC

[6] POWER LED (green): Lit while 24V DC power is supplied from main unit

[7] Terminal block (European type) for connecting analog voltage/ current signal and 24VDC.

[8] Special adapter connector: Used to connect this special adapter to PLC main unit or special adapter.

[9] DIN rail mounting hook

[10] Special adapter fixing hook

[11] Special adapter connector:

Used to connect communication or analog special adapter to the left side of the C24-ADP.

7. Guidelines for the safety of the user and protection of the C24-ADP

• If any doubt at any stage during the installation of C24-ADP, always consult a professional electrical engineer who is qualified and trained to local and national standards. If in doubt about the operation and use of the C24-ADP, please consult the nearest BRASILTEC distributor.

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