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User's Manual for HCA8C Series Programmable Controller

This manual gives a detailed introduction of HCA8C specification.
This manual should be read and understood before attempting to install or use the unit.

1. Product overview

1.1 Basic functions

[Up to 256 input/output points]
Maximum number of input/output points (including I/O points of extension blocks and the main unit) is 256 points, up to max. 384 points when HC-LINK is used.
[Powered extension units/blocks that can be connected]
HCA8C Series input/output extension blocks can be connected.
Up to 7 HCA8C Series special function units/blocks can be connected.
[Program memory]
The PLC has a 64K-step RAM memory.
[Operation instructions]
Various instructions, such as floating-point and character string processing instructions and scaling instructions, are provided.
[Built-in RUN/STOP switch]
The PLC can be started and stopped with the built-in switch.
RUN and STOP commands can be given to the PLC through a general-purpose input terminal or peripheral device.
[Writing during RUN]
The programming software for personal computer enables you to modify the program while the PLC is running.
[Built-in clock function]
The PLC has a clock function to control the time.
[Programming tool]
Use a version of HCP-WORKS applicable to HCA8C.
[Remote debugging of program]
Programming software enables you to remotely transfer the program and monitor the PLC operation through a modem connected to the RS-232C expansion board or RS-232C communication special adapter.

1.2 Input/output high-speed processing function of main unit

[High-speed counter function]
- 1-phase 100 kHz x 6 points + 10 kHz x 2 points
- 2-phase 50 kHz x 2 points

[Pulse catch function]
Signals with short ON width or OFF width can be captured without a complicated program.

Input terminal	Signal ON/OFF width
X000 to X005	5µs
X006, X007	50µs

[Input interruption function (with delay function)]
Interruption routines can be processed preferentially by external signals with a minimum ON or OFF width of 5 µs (X0 to X5).
[Pulse output function]
Pulses of up to 100kHz can be output simultaneously (Y000-Y003).
Program can be easily created using various instructions.

Instruction	Description
DSZR	Mechanical zero return instruction with DOG search function
ABS	Instruction to read the current value from a servo amplifier with absolute position (ABS) detecting function
DRVI	Positioning (relative positioning) to specify the movement from the current position
DRVA	Positioning (absolute positioning) to specify the target position based on an absolute value 0
DPLSV	Instruction to change the pulse train output frequency
DVIT	Positioning for fixed-feed interruption drive

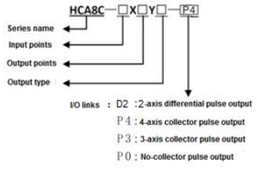
1.3 Communication and network functions

An expansion board, special adapter or special function block for each communication function can be connected.
[Kinds of communication functions]
- Programming communication through RS485C, RS422
- Parallel link
- Computer link
- No-protocol communication through RS-232C/ RS485
- Inverter communication

1.4 Analog functions

[Types of analog functions]
- Voltage/current input
- Voltage/current output
- Temperature sensor input (thermocouple, Pt100, Pt1000)
- Temperature control

1.5 Interpretation of model names (Main unit, I/O extension blocks)



2. List of products

2.1 Main unit

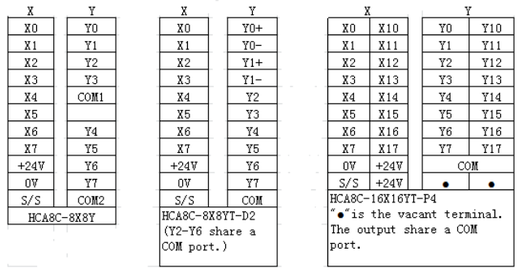
Model Name	Input		Output		Connection type	Drive power supply	5V DC power supply capacity(mA)
	Points	Type	Points	Type			
HCA8C-8X8YT-P4	8	24VDC	8	Transistor	Terminal block	24VDC	350
HCA8C-8X8YR	8	24VDC	8	Relay	Terminal block	24VDC	350
HCA8C-16X16YT-P4	16	24VDC	16	Transistor	Connector	24VDC	350
HCA8C-8X8YT-D2	8	24VDC	8	6-channel transistor / 2-channel differential	Terminal block	24VDC	350

2.2. I/O extension blocks

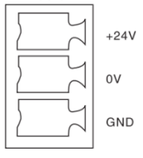
Model Name	Input		Output		Connection type	I/O occupied points	5V DC power supply capacity
	Points	Type	Points	Type			
HCA8C-4EX4EYR	4	24VDC	4	Relay	Terminal block	8	40
HCA8C-4EX4EYT	4	24VDC	4	Transistor	Terminal block	8	40
HCA8C-8EX	8	24VDC	--	--	Terminal block	8	25
HCA8C-8EYR	--	--	8	Relay	Terminal block	8	30
HCA8C-8EYT	--	--	8	Transistor	Terminal block	8	30
HCA8C-8EX8EYR	8	24VDC	8	Relay	Terminal block	16	60
HCA8C-8EX8EYT	8	24VDC	8	Transistor	Terminal block	16	60
HCA8C-16EX	16	24VDC	--	--	Terminal block	16	30
HCA8C-16EYR	--	--	16	Relay	Terminal block	16	50
HCA8C-16EYT	--	--	16	Transistor	Terminal block	16	50
HCA8C-16EX-C	16	24VDC	--	--	Connector	16	30
HCA8C-16EYT-C	--	--	16	Transistor	Connector	16	50

2.3 Terminal layout

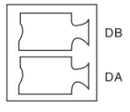
Main unit



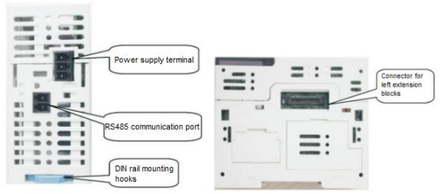
Power supply terminal



RS485



2.4 Part names



3. Generic specification and safety precautions

3.1 Generic specification

Items	Specification				
Ambient temperature	0 to 55°C when operating and -25 to 75°C when stored				
Vibration resistance		Frequency (Hz)	Acceleration (m/s^2)	Half amplitude (mm)	Sweep Count for X, Y, Z: 10 times (80 min. in each direction)
	When installed on DIN rail	10 to 57	--	0.035	
		57 to 150	4.9	--	
	When installed directly		--	0.075	
			9.8	--	
Shock resistance	(147m/s^2 Acceleration, Action time: 11ms, 3 times by half-sine pulse in each direction X, Y, and Z				
Noise resistance	By noise simulator at noise voltage of 1,000Vp-p, noise width of 1µs, rise time of 1ns and period of 30 to 100Hz				
Dielectric withstand voltage	500V AC for one minute				
Insulation resistance	5MΩor more by 500V DC megger				
Grounding	Class D grounding (grounding resistance: 100Ωor less) <Common grounding with a heavy electrical system is not allowed.>				
Working atmosphere	Free from corrosive or flammable gas and excessive conductive dusts				
Working altitude	<2000m				

3.2 Safety precautions

Design Precautions DANGER

• Make sure to have the following safety circuits outside of the PLC to ensure safe system operation even during external power supply problems or PLC failure.
Otherwise, malfunctions may cause serious accidents.
1) Most importantly, have the following: an emergency stop circuit, a protection circuit, an interlock circuit for opposite movements (such as normal vs. reverse rotation), and an interlock circuit (to prevent damage to the equipment at the upper and lower positioning limits).
2) Note that when the PLC CPU detects an error, such as a watchdog timer error, during self-diagnosis, all outputs are turned off. Also, when an error that cannot be detected by the PLC CPU occurs in an input/output control block, output control may be disabled.
External circuits and mechanisms should be designed to ensure safe machinery operation in such a case.
3) Note that when an error occurs in a relay, triac or transistor output device, the output could be held either on or off.
For output signals that may lead to serious accidents, external circuits and mechanisms should be designed to ensure safe machinery operation in such a case.

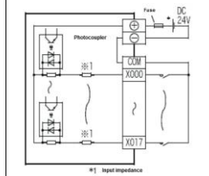
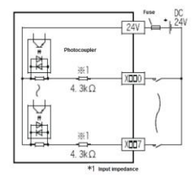
Design Precautions CAUTION

• Do not bundle the control line together with or lay it close to the main circuit or power line. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit or power line. Noise may cause malfunctions.
• Install module so that excessive force will not be applied to peripheral device connectors, power connectors or input/output connectors.
Failure to do so may result in wire damage/breakage or PLC failure.

Wiring Precautions DANGER

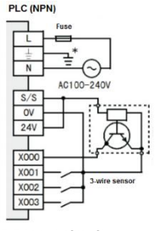
•Make sure to cut off all phases of the power supply externally before attempting installation or wiring work.
Failure to do so may cause electric shock or damage to the product.
• Make sure to attach the terminal cover, offered as an accessory, before turning on the power or initiating operation after installation or wiring work.
Failure to do so may cause electric shock.
• Make sure to properly wire theHCA8C Series extension equipment in accordance with the following precautions.
Failure to do so may cause electric shock, a short-circuit, wire breakage, or damage to the product.
- The disposal size of the cable end should follow the dimensions described in this manual.
- Tightening torque should be between 0.5 and 0.8 N•m.
• Make sure to properly wire to the European terminal board in accordance with the following precautions.
Failure to do so may cause electric shock, a short-circuit, wire breakage, or damage to the product.
- The disposal size of the cable end should follow the dimensions described in this manual.
- Tightening torque should be between 0.5 and 0.8 N•m.
- Twist the end of strand wire and make sure that there are no loose wires.
- Do not solder-plate the electric wire ends.
- Do not connect more than the specified number of wires or electric wires of unspecified size.
- Affix the electric wires so that neither the terminal block nor the connected parts are directly stressed.

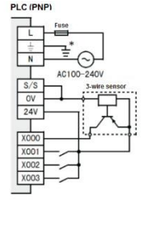
3.3 24V DC input specification

Items	24V DC input specification			
	Main unit/ HCA8C input extension blocks		HCA8C input extension blocks	
Input circuit configuration				
Input signal voltage	24V DC +20% -15% Ripple Voltage (p-p) 5% or less			
Input impedance	Main unit	X000 ~ X005	3.9kΩ	4.3kΩ
		X006, X007	3.3kΩ	
		X010 ~ X017	4.3kΩ	
	HCA8C extension blocks		4.3kΩ	
Input signal current	Main unit	X000 ~ X005	6mA/24V DC	5mA/24V DC
		X006, X007	7mA/24V DC	
		X010 ~ X017	5mA/24V DC	
	HCA8C extension blocks		5mA/24V DC	
Input sensitivity current ON	Main unit	X000 ~ X005	3.5mA or more	3.5mA or more
		X006, X007	4.5mA or more	
		X010 ~ X017	3.5mA or more	
	HCA8C extension blocks		3.5mA or more	
Input sensitivity current OFF	1.5mA or less			1.5mA or less
Input response time	Approx. 10ms			Approx. 10ms
Input signal form	Sink input: No-voltage contact input/NPN open collector transistor Source input: No-voltage contact input/PNP open collector transistor			
Circuit insulation	Photocoupler insulation			
Input operation display	Main unit	Turning on the input will light the LED indicator lamp		
	HCA8C extension blocks			

3.3.1 Input terminals

There are two optional connection methods (sink input/ source input) between input terminals and S/S terminal.
Instructions for connecting input devices:
1) In the case of no-voltage contact:
The input current of this PLC is 5 to 7 mA/24V DC. Use input devices applicable to this minute current.
2) In the case of input device with built-in series diode:
When lead switches with a series LED are used, up to two switches can be connected in series.





3.3.2 Input circuit

The primary and secondary circuits for input are insulated with a photocoupler, and the second circuit is provided with a C-R filter.
The C-R filter is designed to prevent malfunctions caused by chattering of the input contact and noise from the input line.
X000 to X017 have digital filters, and the filter time can be changed in increments of 1ms in the range from 0 to 60ms through applied instructions. When 0 is specified for the time, the input filter values are set as shown in the following table.

Input number	Input filter value when 0 is specified
X000 to X005	5 µs*1
X006, X007	50 µs
X010 to X017	200 µs

*1 When setting the input filter to 5µs or capturing pulses of a response frequency of 50 to 100kHz with a high-speed counter, wire the terminals as stated below.

- The wiring length should be 5m or less.
- Connect a bleeder resistance of 1.5kΩ(1W or more) to the input terminal, so that the sum of the load current of the open collector transistor output on the mating device and the input current of the main body is 20mA or more.

3.3.3 Input sensitivity

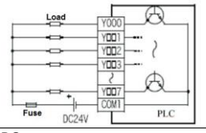
The Main units input current and input sensitivity are shown in the following table.

When DC diodes or resistors are provided at input contacts or when parallel resistors or leakage current are present at input contacts, perform wiring in accordance with this user's manual.

Items		X000 to X005	X006, X007	X010 to X017
Input voltage		24V DC +20% -15% Ripple Voltage (p-p) 5% or less		
Input current		6mA	7mA	5mA
Input sensitivity current	ON	3.5mA or more	4.5mA or more	3.5mA or more
	OFF	1.5mA or less	1.5mA or less	1.5mA or less

3.4 Output specification

• Transistor output specification

Items				Specification	
Output circuit configuration					
External power supply				5 to 30V DC	
Max. load	Resistance load	Main unit	Y000 to Y003	0.3A/1 point	Make sure that the total load current of 16 resistance load points is 1.6A or less
			Y004 to Y017	0.1A/1 point	
		HCA8C-16EYT, HCA8C-32EYT		0.1A/1 point	
		HCA8C-16EYT-C		0.3A/1 point	Make sure that the total load current of 16 resistance load points is 1.6A or less.
		HCA8C-8EYT HCA8C-16EYT HCA8C-16EYR		0.5A/1 point	The total load current of resistance loads per common terminal should be the following value. 4points/common: 0.8A 8points/common: 1.6A
		HCA8C-8EYTR		1A/1 point	Make sure that the total load current of 4 resistance load points is 2A or less.
	Inductive load	Main unit	Y000 to Y003	7.2W/1 point (24V DC)	Make sure that the total load of 16 inductive load points is 38.4W/24V DC or less.
			Y004 to Y017	2.4W/1 point (24V DC)	
		HCA8C-16EYT, HCA8C-32EYT		2.4W/1 point (24V DC)	
		HCA8C-16EYT-C		7.2W/1 point (24V DC)	
		HCA8C-8EYT, HCA8C-16EYT, HCA8C-16EYR		12W/1 point (24V DC)	
		HCA8C-8EYT-H		24W/1 point (24V DC)	
	Lamp load	Main unit	Y000 to Y003	0.9W/1 point (24V DC)	Make sure that the total load of 16 lamp load points is 4.8W/24V DC or less.
			Y004 to Y017	0.3W/1 point (24V DC)	
		HCA8C-16EYT, HCA8C-32EYT		0.3W/1 point (24V DC)	
		HCA8C-16EYT-C		1W/1 point (24V DC)	
		HCA8C-8EYT, HCA8C-16EYT, HCA8C-16EYR		1.5W/1 point (24V DC)	
		HCA8C-8EYTR		3W/1 point (24V DC)	
Open circuit leakage current				0.1mA or less/30V DC	
ON voltage				1.5V	
Response time	OFF→ON	Main unit	Y000 to Y003	5µs or less/10mA or more (5 to 24V DC)	
			Y004 to Y017	0.2ms or less/100mA (24V DC)	
		Extension blocks			
	ON→OFF	Main unit	Y000 to Y003	5µs or less/10mA or more (5 to 24V DC)	
			Y004 to Y017	0.2ms or less/100mA (24V DC)	
		Extension blocks			
Circuit insulation				Photocoupler insulation	
Output operation display		Main unit		Monitored by the display module	
		Extension blocks		LED on panel lights when photocoupler is driven.	

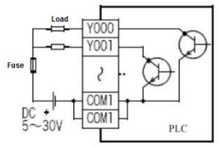
4 or 8 transistor output points are covered by one common terminal. For driving the load, use a smoothing power supply of 5 to 30V DC that can output current two or more times the rated current of the fuse connected to the load circuit.

The internal circuit of the PLC and the output transistor are insulated with a photocoupler. The common blocks are separated from one another. Operation indicator LEDs are built into the main unit and output extension blocks, and turn ON when photocouplers are actuated. The response time from when the PLC drives (or shuts down) the photocoupler until the transistor is turned on (or off) is 5 µs or less.

(1) Output terminals

4, 8 or 16 transistor output points are covered by one common terminal.

Two COM terminals connected each other inside the PLC are provided for sink outputs in the HCA8C-8X8YT main unit, transistor output type extension blocks for output. HCA8C. For external wiring, connect two COM terminals outside the PLC so that the load applied on each COM terminal becomes smaller.



(2) External power supply

For driving the load, use a smoothing power supply of 5 to30V DC that can output current two or more times the rated current of the fuse connected to the load circuit.

(3) Circuit insulation

The internal circuit of the PLC and the output transistor are insulated with a photocoupler. The common blocks are separated from one another.

(4) Display of operation

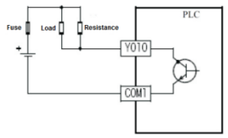
The main unit does not have operation indicator LEDs, but the operation can be monitored with the display module. Operation indicator LEDs are built into the output extension blocks, and turn ON when photocouplers are actuated.

(5) Response time

The time from when the PLC drives (or shuts down) the photocoupler until the transistor is turned on (or off) is shown in the following table.

Classification		Response time	Load current	
Main unit	Y000~Y003	5 µs or less	5 to 24V DC 10mA or more	When using an instruction related to pulse train output or positioning, make sure to set the load current to 10 to 100mA (5 to 24V DC)
	Y004~Y017			
Extension blocks		0.2 ms or less	24V DC 100mA *1	

*1 The transistor OFF time is longer under lighter loads. For example, under a load of 24V DC 40mA, the response time is approx. 0.3ms. When response performance is required under light loads, provide a dummy resistor as shown below to increase the load current.



(6) Output current

The ON voltage of the output transistor is approx. 1.5V.

When driving a semiconductor element, carefully check the input voltage characteristics of the applied element.

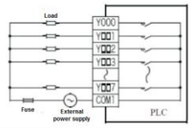
Model		Output current	Limitation
Main unit	Y000 to Y003	0.3A/1 point*1	Make sure that the total load current of resistance loads per common terminal (16points/common) is 1.6A so that temperature rise is restrained
	Y004 to Y017	0.1A/1 point	
Extension blocks	HCA8C-16EYT HCA8C-32EYT	0.1A/1 point	
	HCA8C-16EYT-C	0.3A/1 point	Make sure that the total load current of 16 resistance load points is 1.6A or less
	HCA8C-8EYT HCA8C-16EYT	0.5A/1 point	The total load current of resistance loads per common terminal should be the following value. 4points/common: 0.8A 8points/common: 1.6A
	HCA8C-8EYT-H	1A/1 point	Make sure that the total load current of 4 resistance load points is 2A or less.

*1. When using an instruction related to pulse train output or positioning, make sure to set the load current to 10 to 100mA (5 to 24V DC).

(7) Open circuit leakage current

0.1mA or less

• **Relay output specification**

Items	Relay output specification
Output circuit diagram	
External power supply	30V DC or less or 250V AC or less
Max. load — Resistance load (HCA8C-8ER, HCA8C-16EYR)	2A/1 point — The total resistance load current per common should be as follows: 4 output points/common: 8A or less 8 output points/common: 8A or less
Max. load — Inductive load (HCA8C-16EYT, HCA8C-8ER, HCA8C-16EYR)	80VA — For the product life, refer to this manual.
Minimum load	5V DC, 2mA (reference values)
Open circuit leakage current	--
Response time	OFF→ON: Approx. 10 ms; ON→OFF: Approx. 10 ms
Circuit insulation	Mechanical insulation
Display of output operation	Supplying power to the relay coil will light the LED indicator lamp on panel.

(1) Product life of relay contacts

The standard life of contacts used for Inductive loads, such as contactors and solenoid valves, is 500,000 operations at 20VA.

The following table shows the approximate life of a relay based on the results of an operation life test.

Test condition: 1 sec. ON/1 sec. OFF

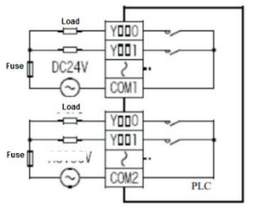
Load capacity		Contact life
20 VA	0.2A/100V AC	3,000,000 times
	0.1A/200V AC	
35 VA	0.35A/100V AC	1,000,000 times
	0.17A/200V AC	
80 VA	0.8A/100V AC	200,000 times
	0.4A/200V AC	

(2) Output terminals

One common terminal is used for 4 or 8 relay output points. The common terminal blocks can drive loads of different circuit voltage systems. Use an external power supply of 30V DC or less or 250VAC or less for loads.

When power is applied to the output relay coil, the LED is lit, and the output contact is turned on. The response time of the output relay from when the power is applied to the coil until the output contact is turned on and from when the coil is shut off until the output contact is turned off is approx. 10ms.

When an inductive load is switched, connect a diode (for commutation) or a surge absorber in parallel with this load.



(3) External power supply

Use an external power supply of 30V DC or less or 250VAC or less for loads.

(4) Circuit insulation

The PLC internal circuit and external load circuits are electrically insulated between the output relay coil and contact. The common terminal blocks are separated from one another.

(5) Display of operation

When power is applied to the output relay coil, the LED is lit, and the output contact is turned on.

(6) Response time

The response time of the output relay from when the power is applied to the coil until the output contact is turned on and from when the coil is shut off until the output contact is turned off is approx. 10ms.

(7) Output current

At a circuit voltage of 250V AC or less, a resistance load of 2A per point or an inductive load of 80VA or less (100V AC or 200V AC) or the lamp load of 100W or less (100V AC or 200V AC) can be driven.

When an inductive load is switched, connect a diode (for commutation) or a surge absorber in parallel with this load.

DC Circuit	Diode (for commutation)
AC Circuit	Surge absorber

(8) Open circuit leakage current

Because there is no leakage current even while output contacts are OFF, the neon ball, etc. can be driven directly.

4. Troubleshooting with LEDs

When trouble occurs, check the LEDs on the PLC to identify the problem with the PLC.

4.1 POW LED [on/flashing/off]

State of LED	State of PLC	Remedies
On	Power of the specified voltage is being correctly supplied to the power supply terminal.	The power supply is normal.
Flashing	One of the following problems may have occurred. • Power of the specified voltage and current is not being supplied to the power supply terminal. • External wiring is incorrect. • Internal error of PLC	• Check the supply voltage. • After disconnecting the cables other than the power cable, reapply power to the PLC, and check for changes in the state. If no improvement is obtained, consult your local BRASILTEC distributor.
Off	One of the following problems may have occurred. • The power supply is off. • External wiring is incorrect. • Power of the specified voltage is not being supplied to the power supply terminal. • The power cable is broken.	• If the power is not off, check the power supply and the power supply route. If power is being supplied correctly, consult your local BRASILTEC distributor. • After disconnecting the cables other than the power cable, reapply power to the PLC, and check for changes in the state. If no improvement is obtained, consult your local BRASILTEC distributor.

4.2 BAT LED [on/off]

State of LED	State of PLC	Remedies
On	The battery voltage is low.	Immediately replace the battery.
Off	The battery voltage is higher than the value set with D8006.	Normal

4.3 ERR LED [on/flashing/off]

State of LED	State of PLC	Remedies
On	A watchdog timer error may have occurred, or the hardware of the PLC may be damaged.	1) Stop the PLC, and re-apply power. If ERR LED goes off, a watchdog timer error may have occurred. Take any of the following measures. - Review the program The maximum value (D8012) of the scan time should not exceed the setting (D8000) of the watchdog timer. - Check that the input used for input interruption or pulse catch is not being abnormally turned on and off in one scan. - Check that the frequency of the pulse (duty of 50%) input to the high-speed counter does not exceed the specified range. - Add the WDT instructions. Add some WDT instructions to the program, and reset the watchdog timer several times in one scan. - Change the setting of the watchdog timer. Change the watchdog timer setting (D8000) in the program so that the setting is larger than the maximum value of the scan time (D8012). 2) Remove the PLC and supply power to it from another power supply on a desk. If the ERR LED goes off, noise may have affected the PLC. Take the following measures. - Check the ground wiring, and reexamine the wiring route and installation location. - Fit a noise filter onto the power supply line. 3) If the ERR LED does not go off even after the measures stated in (1) and (2) are taken, consult your local BRASILTEC distributor.
Flashing	One of the following errors has occurred in the PLC. • Parameter error • Syntax error • Ladder error	Perform PLC diagnosis and program check with the programming tool. For the remedies, refer to Section "Judgment by Error Codes and Representation of Error Codes".
Off	No errors that stop the PLC have occurred.	If the operations of the PLC are abnormal, perform PLC diagnosis and program check with the programming tool. An I/O error, Comms. error or Runtime error may have occurred.

4.4 RUN LED

When the RUN LED is on, Data link is being executed; When off, Data link is stopped.

5. RS-485 communication

1> Wiring

BRASILTEC new product, HCA8C has built-in RS-485 on one channel (half-duplex, two-pair wiring).

2> Non-Protocol Communication

Non-programming Communication function contains N:N network, Parallel Link, Computer

Link, Non-Protocol Communication (RS, RS2 instruction) and MODBUS master-slave protocol.

Make sure if the devices of communication format (D8120, D8400, D8420), N:N network (D8176~D8180) and parallel link (M8070, M8071) are used in the sequence control program.

If the devices are used, communication cannot be executed normally.

3> Communication setting in the sequence program

Set the communication format using a sequence program. The tables below show the setting details.

•Communication format setting by RS instruction

D8120 (communication format)

This device can set the data length, parity, baud rate, etc.

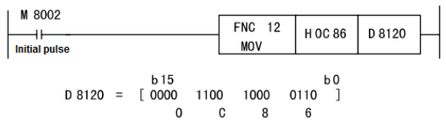
The table below shows the contents of the communication format setting.

Bit No.	Name	Contents	
		0 (bit = OFF)	1 (bit = ON)
b0	Data length	7-bit	8-bit
b1 b2	Parity	b2, b1 (0, 0): Not provided (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 (0, 1, 1, 0): 2400	b7, b6, b5, b4 (0, 1, 1, 1): 4800 (1, 0, 0, 0): 9600 (1, 0, 0, 1): 19200 (1, 0, 1, 0): 38400*1	b7, b6, b5, b4 (1, 0, 1, 1): 57600 (1, 1, 0, 0): 115200
b8	Header	Not provided	Provided (D8124) Initial value: STX (02H)
b9	Terminator	Not provided	Provided (D8125) Initial value: ETX (03H)
b10 b11	Control line	Non-protocol	b11, b10 (0, 0): Not provided <RS-232C interface> (0, 1): Standard mode <RS-232C interface> (1, 0): Interlink mode <RS-232C interface> (1, 1): Modem mode <RS-232C interface, RS-485/RS-422 interface*3>
		Computer link	b11, b10 (0, 0): RS-485/RS-422 interface (1, 0): RS-232C interface
b12	Not applicable		
b13*2	Sum check	Not added	Added
b14*2	Protocol	Not used	Used
b15*2	Control procedure	Format 1	Format 4

*1 Make sure to set as "0" when using non-protocol communication.

*2 When using the RS-485/RS-422 interface, only HCA8 and HCA8C PLCs are applicable.

Communication settings are shown below.



Data length	7-bit
Parity	Even
Stop bit	1-bit
Baud rate (bps)	9600bps
Protocol	Non-protocol
Header	Not provided
Terminator	Not provided
Control line	Modem mode

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