

RFID System/Z series
ID Reader Writer instruction manual

Type name : Z3-RO10-CN



Safety Considerations

(Please read this before use)

Please read the manual carefully and handle it safety.

Notes for designing :

◆ Make sure to not go over the range of apparatus specification for power usage supply/ service condition.

Precautions :

- ◆ The processor must be operated only using approved power supplies.
There is a risk of fire or heat generation exceeds the rated voltage power is eing supplied.
- ◆ Do not disassemble or modify the processor.
Which may cause failure,malfunction, injury or fire.
- ◆ When disposing of the processor, treat it as industrial waste.

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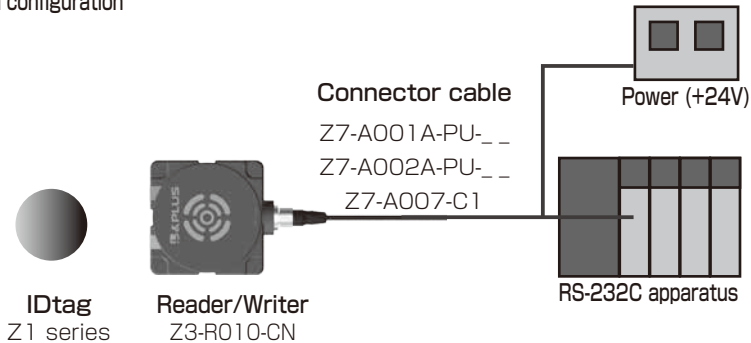
1. Description

1.1. Description

[B&PLUS RFID System/Z series] is a RFID system reading and writing data by an electromagnetic induction method

Connect the ID reader/writer to an apparatus that has RS-232C and able to communicate through RS-232C. It can easily edit data reading and writing to the ID tag through laptop.

1.2 System configuration



Data carrier	Z1 series	The medium which memorizes data (see P.5)
Reader/Writer	Z3-R010-CN	The apparatus which reads and writes the data for the ID tag
Application	Attachment	Software that ables to edit the data
Connector cable	Straight	Z7-A001A-PU-__
	Angle	Z7-A002A-PU-__
	With D-sub	Z7-A007-C1
Power Supply unit	Prepared separately	Please have DC power source
RS-232C apparatus	Prepared separately	Please see P.5 for specifications of the apparatus

About a driver and application

Please obtain application to use with this product and the driver from our homepage

URL : <http://www.b-plus-kk.jp/download.html>

Click the [list of the product documents] and put the part number and you can download.

You will need to put the following ID and password

ID:user , password : wirelessplus

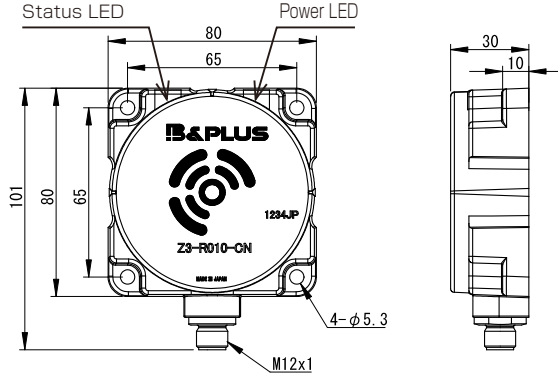
< Wiring considerations >

- Please wire the cable away from a power line and a high pressure apparatus.
- This product is in conformity with EMC directive and indicated CE marking.

Not correspondence to surge current. If the cable to the power is longer than 30m make sure not excessive serge current.

1.3 External form dimensions and specifications

Reader/Writer
Z3-R010-CN

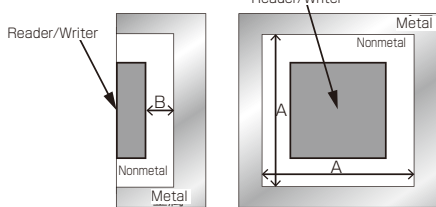


■ General specification

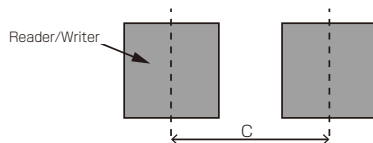
Type code	Z3-R010-CN Initial value of exit code : CR/ACK(standart) Z3-R010-CN/O1 Initial value of exit code : BCC/ACK
Applicable	2K byte Z1-AA04-02K
Data carrier	112 byte Z1-EC02-128, Z1-FA01-128, Z1-FB01-128, Z1-B011-128
Supply voltage	DC24V+10%/-20%(including ripple)
Current consumption	≤ 50mA
The tag presence output	Max power electric current 50mA / opening collector (NPN/PNP)
Operating temperature / humidity	0°C~+50°C / 20%~80% (no condensation)
Storage temperature / humidity	-10°C~+70°C / 10%~90% (no condensation)
Material	PBT
Connection	8 pole pin connectors, M5 screw / clamping torque 1.5Nm
Weight	90g
Wireless Telegraphy Act standard	This appliance has the high frequency use facilities which acquired model (AC-13003 such as Ministry of Internal Affairs and communications designation) designation built-in The facilities authenticate FCC obtained (ID : SWUDE-BNP) and is based on R&TTE order.

When attach the ID reader writer, communications distance may shorten. To avoid influence of the metal and interference, please install the greater value mentioned in the diagram below. Also, note that ID tag can not be metal installed.

■ Metal installation



■ Parallel Setting



Mounting	Type code	Non-metallic area (mm)		Mutual interference(mm)
		A	B	C
Metal mounting	Z3-R010-CN	200	0	500
Non-metal mounting	Z3-R010-CN	200	40	500

Metal installation means to install directly on top of the metal. Circumference (A) is non-metal region.
· Non-metal installation is to have an area (A) metal and reader write, then also back(B) has the non-metal area.

■ Correspondence RFID chip

Supports the communication protocol of the ID chip shown on the right chart.

Please confirm the processing time, communication distance and quality when using anything other than ID tag (the Z1 series)

chip	Manufacturer	Capacity
MB89R118	Fujitsu	2000byte(FRAM)
I-CODE SLI,SLIX	NXP	112byte
Tag-it HF-I plus	TI	256byte
my-d(SRF55V02P)	Infineon	224byte
my-d(SRF55V10P)	Infineon	992byte
Tag-it HF-I standard	TI	32byte
Tag-it HF-I pro	TI	32byte

I-CODE SLI, SLIX は NXP semiconductor、FRAM は Ramtron International、Tag-it は Texas Instruments Incorporated、my-d は Infineon Technologies AG is a registered trademark.

■ LED specification

LED	Color	Condition	Contents
Power LED	Green	ON	Normal operation
		OFF	Power not connected
Status LED	Orange	ON	Recognizing the ID tag
		Blink	Using the tag that is not corresponding to Or an error occurs
		OFF	Not recognizing the ID tag

■ Specification of upper level communication

This reader writer can communicate with FA computer and PC, by RS-232C interface conformity.

Communication condition can be selected by using PC, reader writer software (BPIDZ3R)

The boldface type is a factory default setting

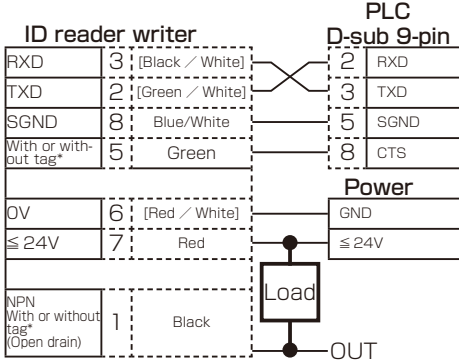
Complied standard	RS-232C
Flow control	N/A
Communication method	Half-duplex
Transmission delay	4800, 9600 ,19200,38400,57600,115200bps
Data length	8-bit
Start-bit	1-bit
Stop-bit	1 or 2 bit
Parity	Odd number、Even number N/A

1.4.Connection diagram

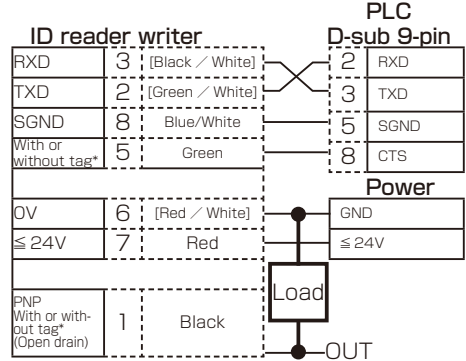
Please wire the ID reader/writer to the connection terminal followed by the wiring diagram shown below. Wire Read/Write Head to connecting terminal for Read/Write Head with reference to [Wiring diagram] below.

1.4.1. Z7-A001A-PU-__ (straight) or Z7A002A-PU-__ (Angle)

■ Case with and without ID tag NPN



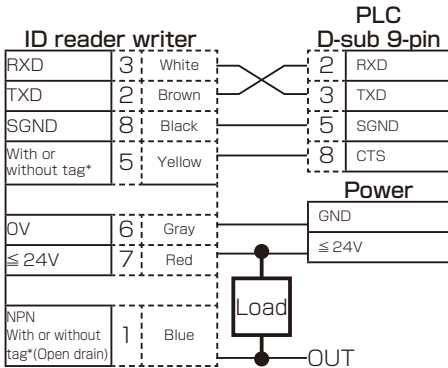
■ Case with and without ID tag PNP



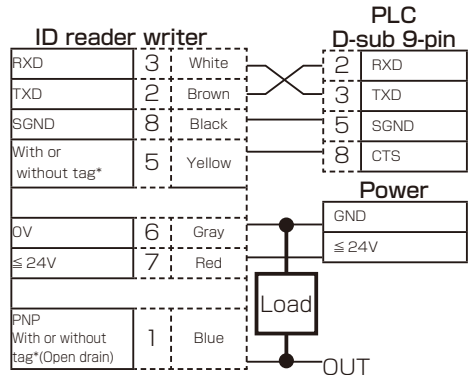
Please wire 5th pin when tag signal is necessary.

1.4.2. Z7-A001A-RB-__ (straight) or Z7-A002A-RB-__ (Angle)

■ Case with and without ID tag NPN



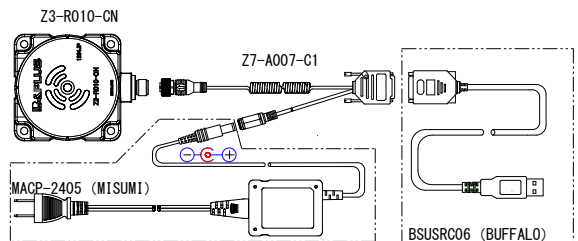
■ Case with and without ID tag PNP



Please wire 5th pin when tag signal is necessary.

1.4.3. In case of Z7-A001-C1

Please wire ID reader/writer according to the wire diagram on the right.



2. Reading software BPIDZ3R

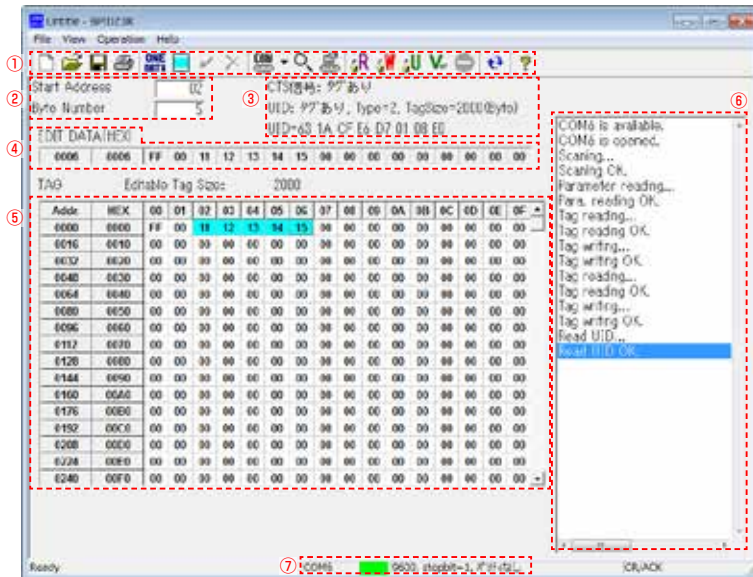
2.1 Activation

This software corresponds to Windows7, Windows 8.1 and Windows 10

Run [BPIDZ3R.exe] from start and select the size and the format of the ID tag.








2.2 Screen description



- ① Command button
- ② Addressing
- ③ Information of the ID tag
- ④ Edit memory
- ⑤ ID tag memory indication
- ⑥ Response Log
- ⑦ RS-232C signal parameter

2.3 File operation

Following icon corresponds to creating new file, open, save and print.

-  Creating new file
-  Open saved file
-  Save file
-  Print
-  Manual (PDF) opens

2.4 Communication setting

After starting select COM port

Select the COM port.

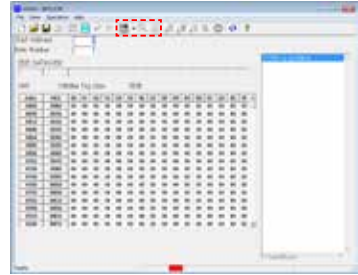
Once the COM port become effective, communicate setting.

Automatically communicates setting

Go to setting for changing communication setting for an option.



baud rate	4800bps, 9600pbs ,19200pbs, 38400 bps,57600pbs,115200pbs
Stop-bit	1bit ,2bit
Parity	Even number,Odd number, N/A



The boldface type is a factory default setting

Exit code* Format	BCC/ACK , CR/ACK+CR , CR/ACK , LFCR/ACK+LFCR																																								
A u t o m a t i c reading mode	When ID tag is in the communication area, it will automatically read within the setting area and reply back. Starting address and number of bytes are decimal numeral input.																																								
Starting address	Starting address of the automatic reading ID tag																																								
Bytes number	Number of bytes to read.																																								
Division of the end cord	Choosing the number of bytes of BCC (1 byte or 2 bytes)																																								
Exit code	When specified the byte by exit code division, voluntary configure the exit code. Please input set point by hexadecimal number																																								
UID response mode	When ID tag is in the communication area, it will automatically read within the setting area and reply back. When ID tag is in the communication area, it will automatically read within the setting area and reply back. <div style="text-align: center;"> <p>■ An end cord in the case of CR</p> <table border="1" style="margin: auto;"> <tr> <td>02</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td><td>00</td><td>E0</td><td>0D</td> </tr> <tr> <td colspan="6" style="text-align: center;">Serial number</td> <td colspan="4" style="text-align: center;">Exit code</td> </tr> <tr> <td colspan="2" style="text-align: center;">Type code</td> <td colspan="8"></td> </tr> </table> <p>■ At the time of serial number inversion</p> <table border="1" style="margin: auto;"> <tr> <td>02</td><td>E0</td><td>00</td><td>00</td><td>01</td><td>02</td><td>03</td><td>04</td><td>05</td><td>0D</td> </tr> </table> </div>	02	05	04	03	02	01	00	00	E0	0D	Serial number						Exit code				Type code										02	E0	00	00	01	02	03	04	05	0D
02	05	04	03	02	01	00	00	E0	0D																																
Serial number						Exit code																																			
Type code																																									
02	E0	00	00	01	02	03	04	05	0D																																
output	Setting up polarity of the ID tag output(open drain.) (NPN · PNP)																																								
Retry count	When an error occurs at the time of communication, it is the number of times that will try inside. When you set in 0 it will not re-try.																																								

The setting is stored in the nonvolatile memory in the ID leader writer.

※ The end cord at the time of factory shipment for Z3-R010-CN is **CR/ACK**



When Z3-R010-CN/01 , setting is BCC/ACK

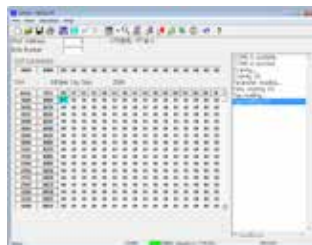
2.5 Reading data

An ID reader writer and an ID tag face in communication areas.

- ① Address to write in it in "Start Address", and to start,
Set the processing number of bytes in "Byte Number".

 A reading range becomes effective when you click

- ②  When you click, it will read an ID tag and display data.
When you want to cancel reading,  click



2.6 Writing data

An ID reader writer and an ID tag face in communication areas.

- ① Address to write in it in "Start Address", and to start,
Set the processing number of bytes in "Byte Number".

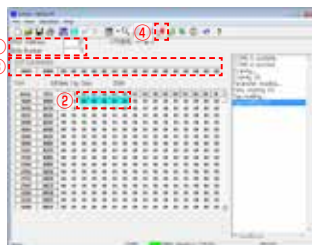
 A reading range becomes effective when you click

- ② double-click the address that wants to change the data.

- ③ Input the data and press Enter.

- ④  Click and input data will be written.

When you want to cancel,  please click



■ About a consolidation data

When you want to write in the selection by the same data,


 click and you can input the data.

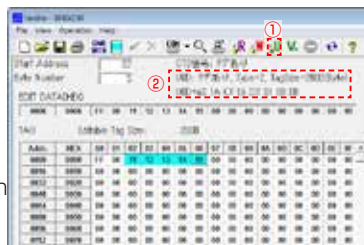
2.7 Identification of the ID tag.

■ Confirmation of UID

 Click and you can confirm the ID tag

■ Version confirmation of the ID reader writer

 Click and you can confirm the ID reader writer version
確認できます。



2.8 Change of the ID tag

When changing the different ID tag and byte/word and the cord

 Click and re-do 2.4 communication setting

3.command and various cords

The form of a command, a start address, the processing number of bytes, an ID tag cord and the error code is comprised by an ASCII form.

3.1 List of commands

Command name	Command sign	Contents
Reading	R	Read data from ID tag
	r	Read data from ID tag (*for ID tag stand by)
Writing	W	Write data to an ID tag.
	w	Write data to an ID tag (* for ID tag stand by).
Batch writing	C	Write the same data to an ID tag consolidated.
	c	Write the same data to an ID tag consolidated.(For ID tag stand by*).
State confirmation	U	Read ID tag presence and types and serial number.
Reset	Q	Reset ID reader writer
Pause instruction execution	S	Pause instruction execution and stand by command.

*ID tag for stand by...accept the command in a state without an ID tag and execute a command when an ID tag was contained in communication range.

3. 2List of error codes

code	Contents
1	No ID tag
2	Reading error
4	Writing error
6	Communication error (parity, stop bit error)
7	Communication data format error
8	BCC error
0	No error

3.3 List of control codes

Control code	Hexadecimal number	Contents
ACK	06H	Cord indicating the normal response
NAK	15H	Cord indicating the abnormal response
STX	02H	Cord indicating the beginning of data
CR	0DH	linefeed code
LFCR	0AH 0DH	Line feed code
BCC	(See below)	Check code

■ BCC calculation method

BCC calculates every 1 byte of the data line in EX-OR (XOR).

The calculation method is on the right chart.

Lead start	R =	52H	XOR
Starting address	0 =	30H	XOR
	0 =	30H	XOR
	1 =	31H	XOR
	3 =	33H	XOR
Processing byte number	0 =	30H	XOR
	1 =	31H	XOR
	2 =	32H	XOR
	8 =	38H	XOR
		BCC =	5BH

3.4 Exit code formats

In a communication format, an exit code is necessary for a command and data line on the end of the control code.

[The end code] can post four kinds shown below in each processing on the communication format.

Exit code	Command	Response
BCC/ACK	R 0000 0001 BCC	<ACK>0
CR/ACK+CR	R 0000 0001 CR	<ACK>0 CR
CR/ACK	R 0000 0001 CR	<ACK>0
LFCR/ACK+LFCR	R 0000 0001 LFCR	<ACK>0 LFCR

4. Command Specification

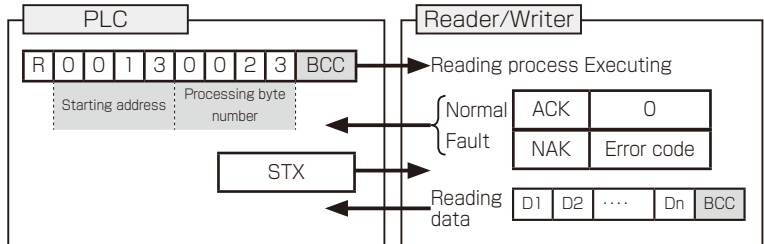
4.1 Reading command

Read the data of the appointed address in the ID tag.

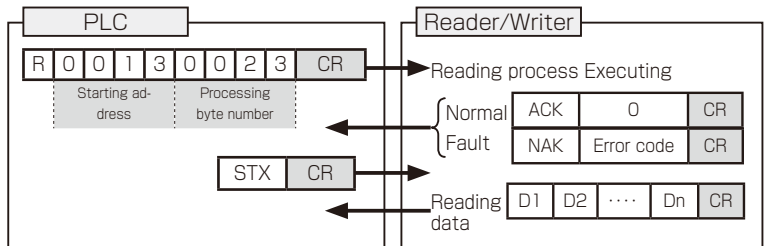
Appoint a start address, the processing number of bytes in an ASCII form in decimal numeral.

It is an example reading a 23 bytes from address 13. Possible to appoint the processing numbers up to 1,024 bytes.

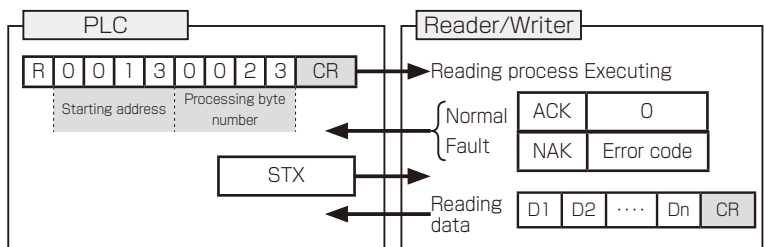
① BCC/ACK



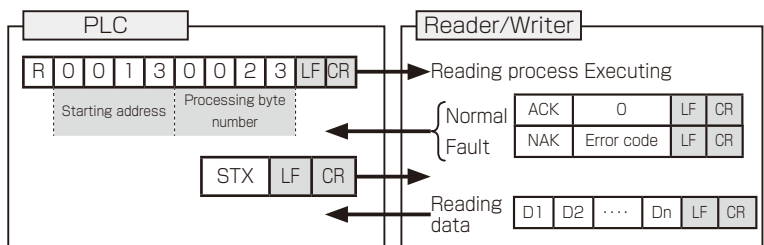
② CR/ACK+CR



③ CR/ACK



④ LFCR/ACK+LFCR



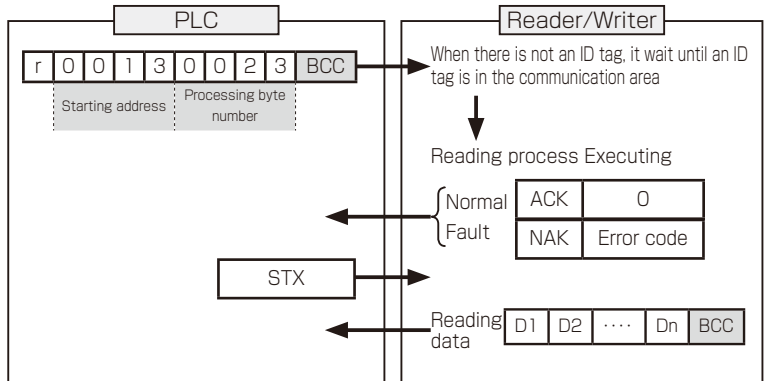
4.2 Reading command(standby)

It is a function same as "a 4.1 reading command".

After the command transmission, wait until an ID tag is in the communication area.

Read 23 bytes from address 13. Possible to appoint the processing numbers up to 1,024 bytes. Anything other is similar to "R" command.

① BCC/ACK



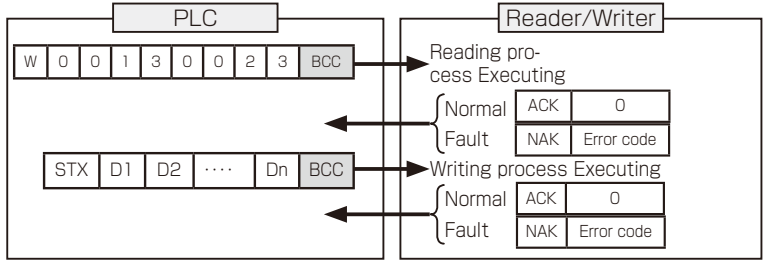
4.3 Writing command

Write in data at an ID tag by a byte unit

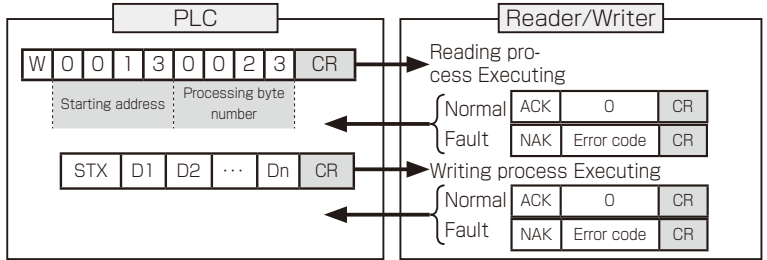
Appoint a start address, the processing number of bytes in an ASCII form in decimal numeral.

It is an example to write in a 23 bytes from address 13. Possible to appoint the processing numbers up to 1,024 bytes.

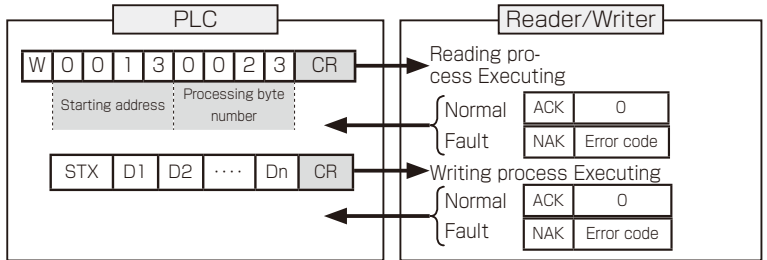
① BCC/ACK



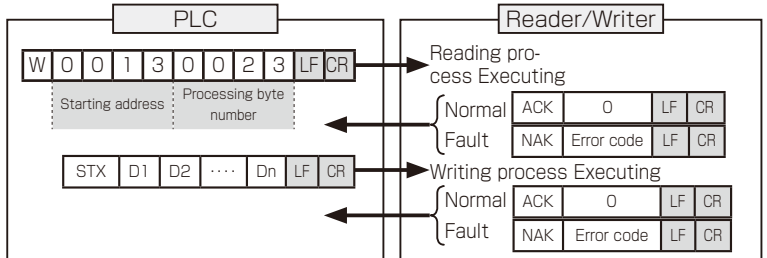
② CR/ACK+CR



③ CR/ACK



④ LFCR/ACK+LFCR



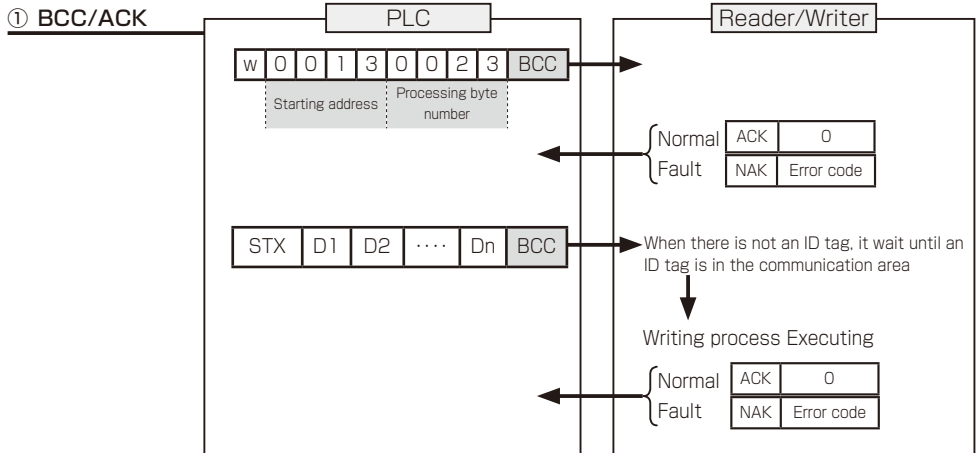
4.4 Writing command(standby)

It is same function as "a 4.3 note command".

After the command transmission, wait until an ID tag is in the communication area.

It is an example to write in a 23 bytes from address 13. Possible to appoint the processing numbers up to 1,024 bytes.

It is similar to "W" command.



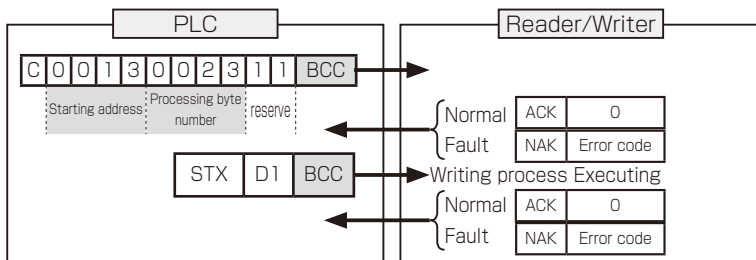
4.5 Collective write command

Writes the same data to the specified address of the ID tag all at once.

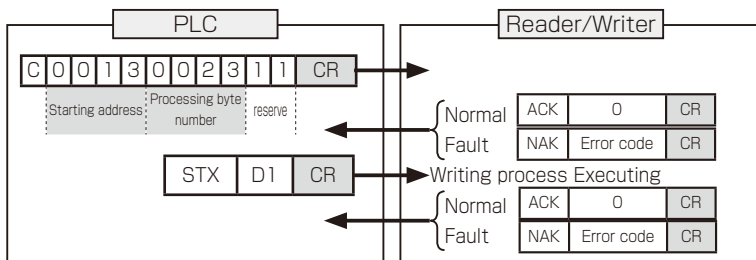
Examples of each exit code are as follows.

Possible to appoint the processing byte up to 1,024 bytes.

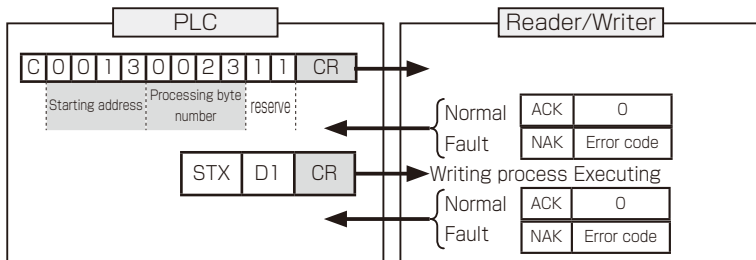
① BCC/ACK



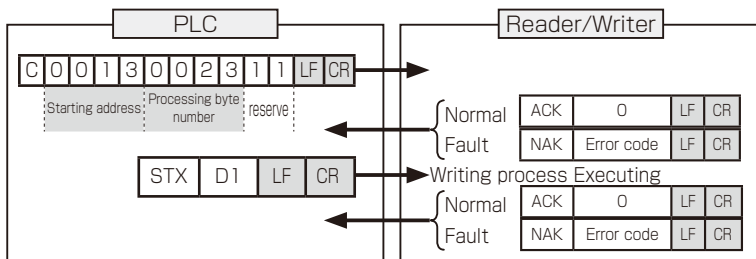
② CR/ACK+CR



③ CR/ACK



④ LFCR/ACK+LFCR



4.6 Collective write command (standby)

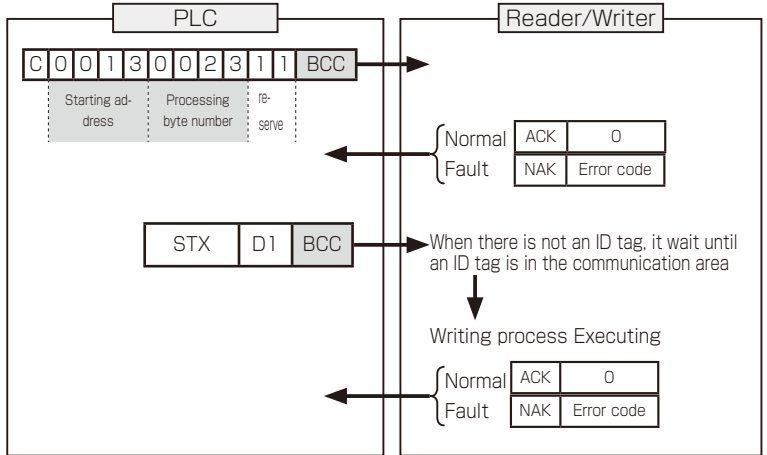
It is same function as "a 4.5 collective write command".

After the command transmission, wait until an ID tag is in the communication area.

Possible to appoint the processing byte up to 1,024 bytes.

Anything else is same as command [C]

① **BCC/ACK**



4.7 State confirmation command

Reply the presence / absence and type of ID tag, ID tag UID.

■ ID tag presence

Code with or without ID tag is configured in ASCII format

Code	IDtag presence
1	With ID tag
0	No tag

■ ID tag type

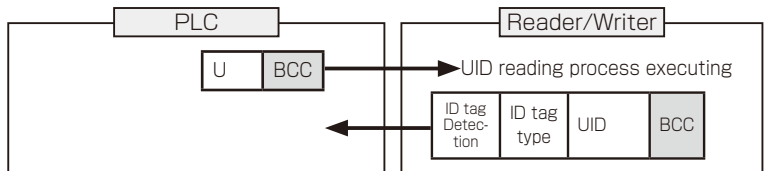
The ID tag type consists of hexadecimal numbers.

ID tag type	chip	Manufacturer	Capacity
02H	MB89R118	Fujitsu	2000byte
03H	I-CODE SLI,SLIX	NXP	112byte
04H	Tag-it HF-I plus	TI	256byte
05H	my-d(SRF55V02P)	infineon	224byte
07H	my-d(SRF55V10P)	infineon	992byte
22H	Tag-it HF-I standard	TI	32byte
21H	Tag-it HF-I pro	TI	32byte

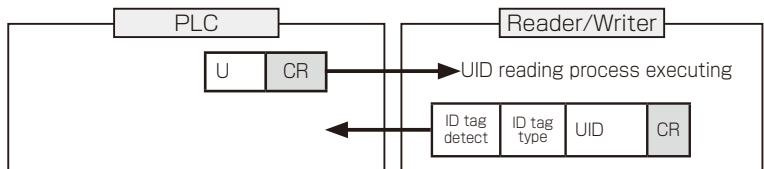
■ UID

8-byte hexadecimal notation. If there is no ID tag, 00h becomes 8 bytes.

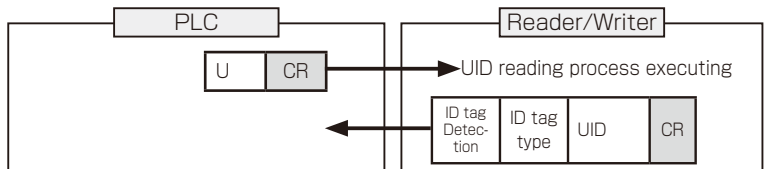
① BCC/ACK



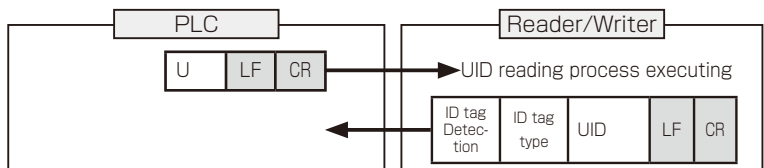
② CR/ACK+CR



③ CR/ACK



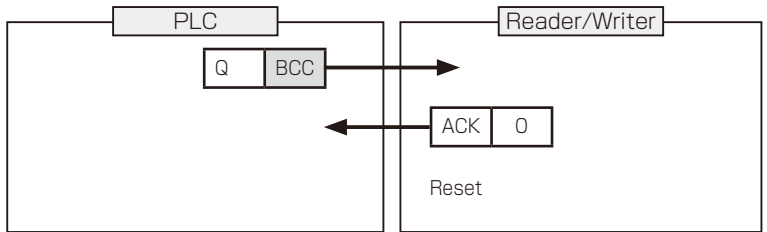
④ LFCR/ACK+LFCR



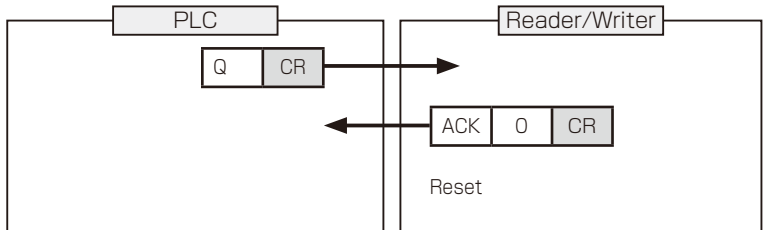
4.8 Reset command

The ID reader / writer is reset, and commands can be accepted after 500 ms.

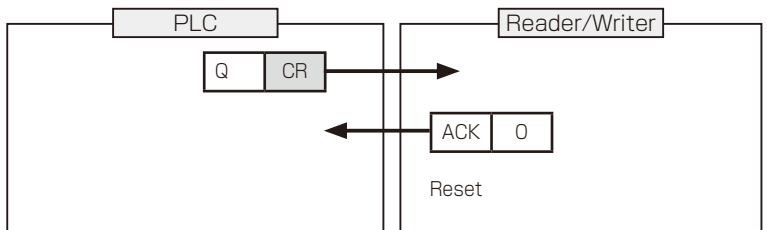
① BCC/ACK



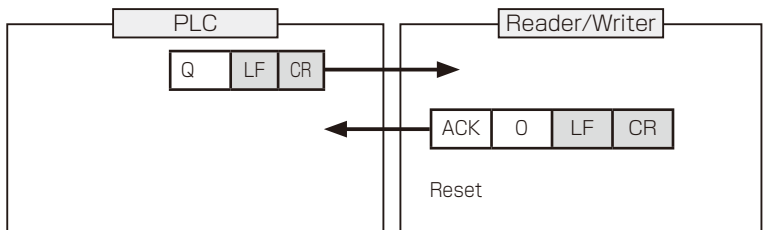
② CR/ACK+CR



③ CR/ACK

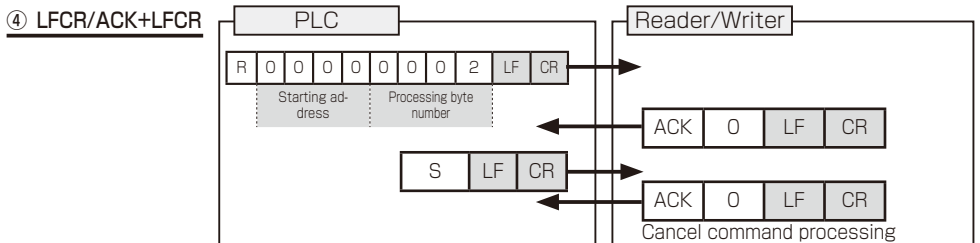
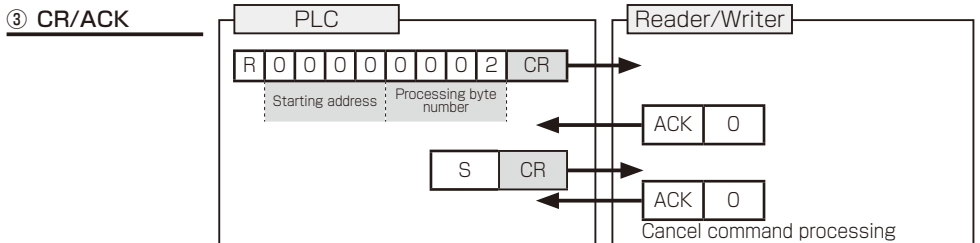
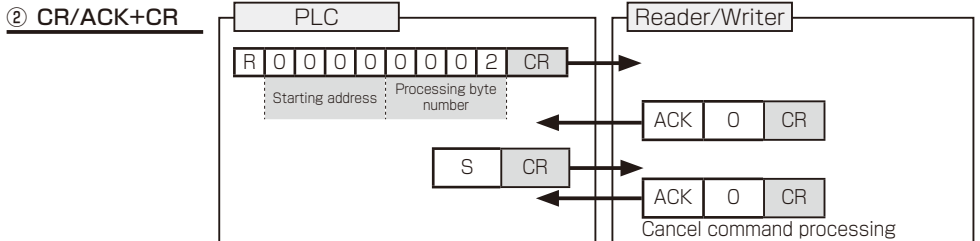
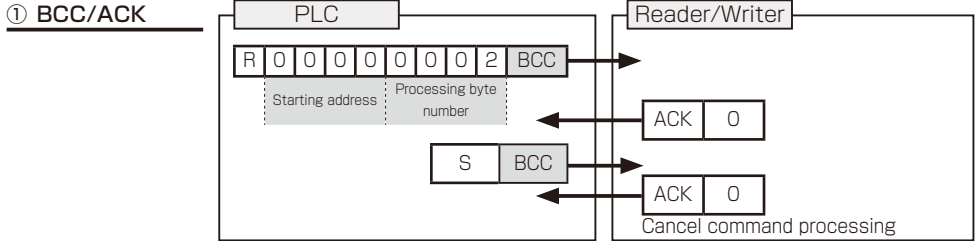


④ LFCR/ACK+LFCR



4.9 Command processing cancellation

Processing stops when S command is sent during command processing.
 The following is a case to stop command processing during read command (R) processing.



5.Processing time

5.1 ID tag of the 2K byte

■ Type code

Z1-AA04-02K

Processing byte number	Read time	Write time
8 byte	18 ms	48 ms
16 byte	33 ms	59 ms
100 byte	104 ms	170 ms
1000 byte	931 ms	1413 ms

5.2 ID tag of the 112 byte

■ Type code

Z1-EC02-128、Z1-FA01-128、Z1-B011-128

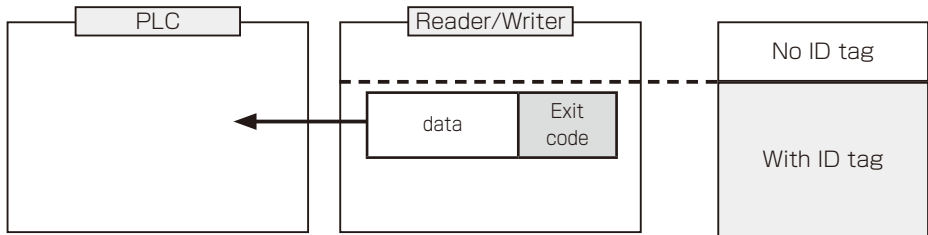
Processing byte number	Read time	Write time
8 byte	18 ms	65 ms
16 byte	33 ms	95 ms
112 byte	105 ms	376 ms

6. Automatic reading

6.1. Automatic reading sequencer

2.4. When "Auto reading mode" is set to "Enable" in communication setting, data of the specified address is automatically transmitted when the ID tag is within communication range.

Please specify the start address and the number of bytes to be read for the ID tag you want to automatically read.

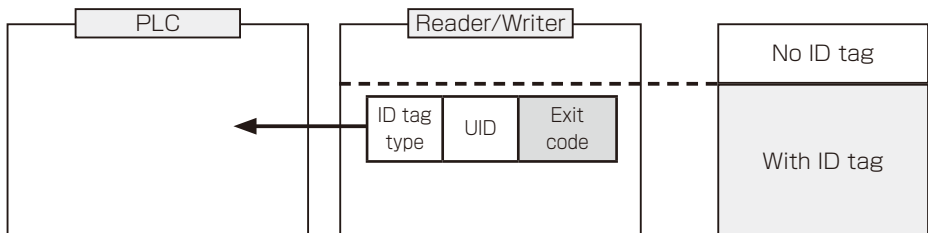


6.2 Automatic serial reading sequencer

When "UID response" is set to "Enable" in "2.4. Communication setting", UID of 8 byte ID tag is automatically transmitted when ID tag enters communication range.

For the ID tag type, refer to "4.7. Status Confirmation Command".

In addition, the exit code is the value set in "2.7. ID tag information confirmation".



7. Certification

■ CE conformity

Z3 - R010 - CN conforms to CE.



■ FCC certification

Z3 - R010 - CN conforms to FCC.



[Original]

This equipment has been tested and found to comply with the limits for a Class B digital device,

pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

Caution:

Any changes or modifications not expressly approved by the party responsible for product compliance could

void the user' s authority to operate the unit.

Application software change history

Date	Version	Contents
2014.12	1.00	New
2015.05	1.10	When accessing the tag, error occurred when the read / write size exceeds 1024 bytes.
2015.11	1.20	Fixed an error that occurs when scanning communication format, 9600/1 / odd.
2017.02	1.30	Support ASCII code 0x21 ~ 0x7E (symbol) display / edit and support up to Windows 10.

Wireless Power Supply by
B & PLUS K.K.

Mail : b-plus-usa@b-plus-kk.com

Web : <http://www.b-plus-kk.com>

- * Info may change the mention contents such as specifications without a notice.
Thank you for understanding
- * Please refer to instruction manual or the user's guide. It can be download by HP.