

ID READER MODULE
TYPE CODE: PCB-70/Z5

Installation Manual
Ver. 1.0

KRD Corporation
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For OEM integration only – device cannot be sold to general public.

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Safety Notes

Please read this manual carefully beforehand for proper handling of the unit and for your safety.

Proper use	8bit reader together with an ID tag which is specified by ISO15693 standard comprise the Identification System and may only be used for this purpose in industrial applications.
Installation and operation	Installation and operation are permitted by trained specialists only. Unauthorized modifications and improper use will result in loss of the right to make warranty and liability claims. When installing the processor, follow exactly the connection diagrams provided later in this manual. Take special care when connecting the processor to external controllers, especially with respect to the selection and polarity of the connections including the power supply. Only approved power supplies may be used. For specific information, see the specification section.
Deployment and inspection	When deploying the identification system, all relevant safety regulations must be followed. In particular, measures must be taken to ensure that any defect in the identification system does not result in a hazard to persons or equipment. This includes maintaining the permissible ambient conditions and regular inspection for proper function of the identification system and all the associated components.
Malfunction	At the first sign that the identification system is not working properly, it should be taken out of service and guarded against unauthorized use.
Scope	This document applies to 8bit reader.

FCC Regulations

This unit 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 unit 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 unit does cause harmful interference to radio or television reception, which can be determined by turning the unit 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 unit and receiver.
- Connect the unit 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.

This unit complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
 (1) This unit may not cause harmful interference, and (2) This unit must accept any interference received, including interference that may cause undesired operation.

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.

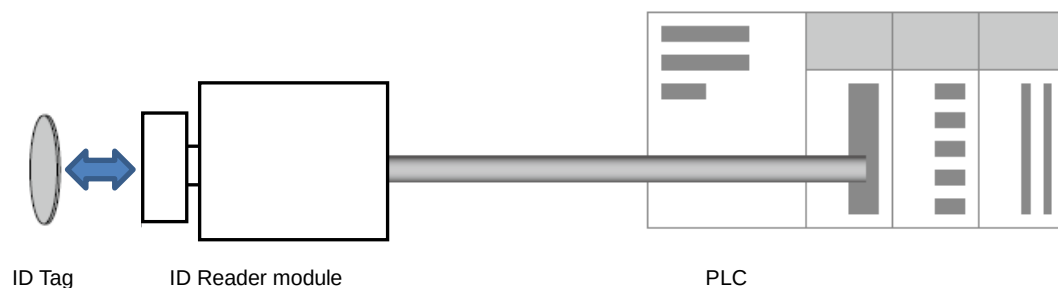
1. Product description

1.1 General description

This ID reader module is member of the 8 bit system. The 8 bit system is a simple identification system communicating 8 bit data. This Read-Only system needs no particular program to read data. The module reads data of an ID tag automatically when the ID tag comes into the reading area of the reader module. The module gets the first three bytes of user area of the ID tag. The first byte (8 bits) is used for customer's identification data, the second and third bytes are used for data check function by the module. (see 1.3 Data format) The reader module performs error checking. If the result is OK, as well as data output to the 8 bit data lines, and activates the data-valid line. After confirming that the data-valid is active, the host system captures the 8 bit data.

To write data into the ID tag, the Reader / Writer of the 8bit system is available.

1.2 Concept of the 8bit system



- The ID reader module starts reading automatically as soon as an ID tag comes into its communication area.
- The ID reader module outputs the read data in 8 bits parallel output lines which are usually connected to PLC.

1.3 Data format

The 8bit system uses the ID tag which is compliant with the ISO-15693 standard. Data of this system is stored in the ID tag by 8bit format. User's data 8 bits are set in address 00 of the ID tag. The inverted bits of the user's data are written in address 01 and 02. The ID reader module compares three data which are stored in address 00, 01 and 02. If the result of checking is true; the module outputs 8 bits as the reading data and activates the data-valid line. If the result is false, LED of the module blinks slowly and indicates that data check error is detected. In this case, the data-valid line is deactivated and other all outputs are not changed and previous status is maintained.

(example)

	Data bit No.								User data	Check data
	7	6	5	4	3	2	1	0		
00H address	0	0	0	0	0	1	0	0	04H	—
01H address	1	1	1	1	1	0	1	1	—	FBH
02H address	1	1	1	1	1	0	1	1	—	FBH

2. Specifications

Type code: PCB-70/Z5

Module name: ID Reader Module

■ Electrical specification

Power supply	24V DC+10/-20% (include ripple)
Current consumption	50mA maximum
Operating temperature	0 - +50°C
Operating humidity	35 - 95%RH (no condensation)
Frequency	13.56 MHz
Standard	ISO-15693

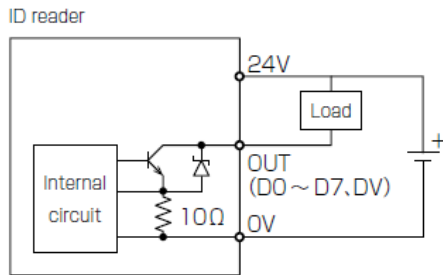
■ LED Status

LED status	Data Valid Output	Description of the functions
Off	Low	No ID tag present
On	High	ID tag present and data are valid
Blinking (slowly)	Low	Data check error occurs
Blinking (quickly)	Low	Any of those “ON” output signals that indicate Read data or Data valid is short-circuited.

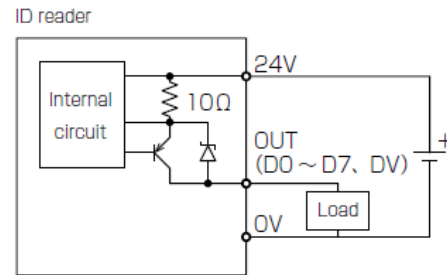
■ Output specification

Load voltage	30 V DC (max.)
Load current	50 mA (max.)
Residual voltage	Less than 1.5 V
Leakage current	Less than 0.08 mA

NPN type



PNP type



■ Output signal

Signals	Input / Output	Cable color	Description
Power supply +24 V	-	White	Connect (+) side of the DC24V Power supply
Power supply 0 V	-	Pale Blue	Connect (-) side of the DC24V Power supply
Read Data D0	Out	Brown	Output data read from Bit address [0]
Read Data D1	Out	Red	Output data read from Bit address [1]
Read Data D2	Out	Orange	Output data read from Bit address [2]
Read Data D3	Out	Yellow	Output data read from Bit address [3]
Read Data D4	Out	Green	Output data read from Bit address [4]
Read Data D5	Out	Blue	Output data read from Bit address [5]
Read Data D6	Out	Violet	Output data read from Bit address [6]
Read Data D7	Out	Gray	Output data read from Bit address [7]
Data valid DV	Out	Black	Output signal that indicates the data is valid

3. Installation and Wiring

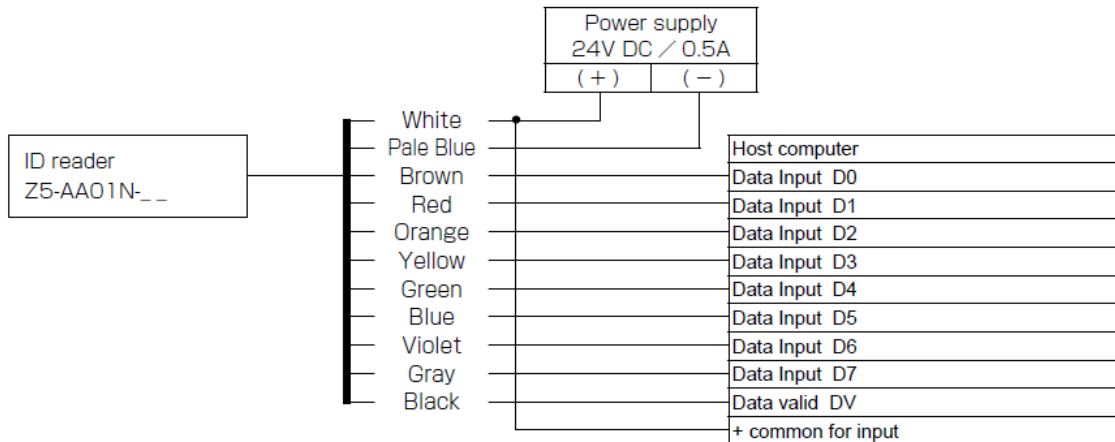
■ Installation

Please put this module in enclosure of a final product. And it is certainly fixed mechanically so that a module may not move. Film-shape shield film wraps modules are attached for the purpose of blocking electromagnetic radiation from the board. Therefore, don't remove the shield film or never modify it. In addition, changes or modifications of antenna not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

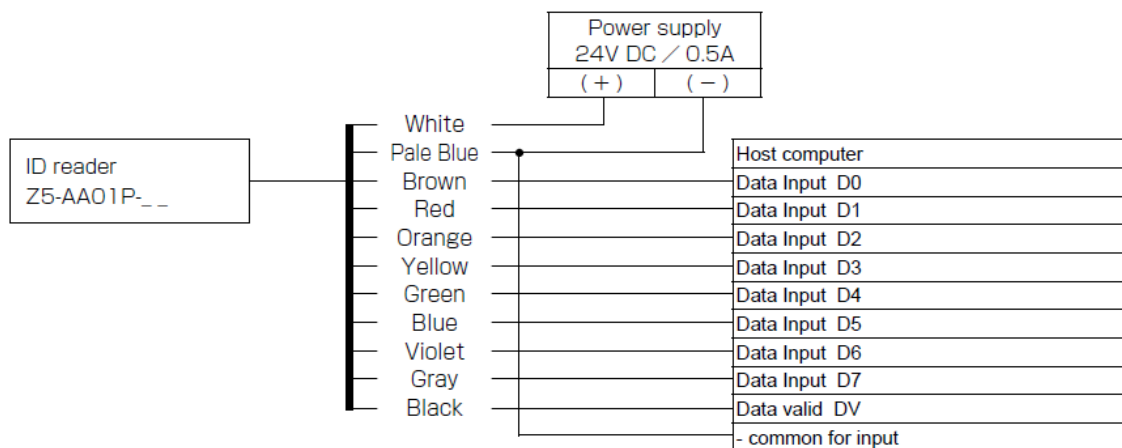
The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

■ Wiring

[NPN type]



[PNP type]



[Notes]

- Maximum cable length between the ID Reader module and external device is 20 m.
- When connecting user's cable to the ID Reader module, be sure to use the cable of which conductors are bigger than 0.5 mm² for power supply line (white, pale blue) and 0.2 mm² for signal line (brown ... black).

4. Labeling

Final Product Labeling

When this module is integrated into an final product, the final product must display an exterior label with FCC ID Code and the FCC statement below.

The format of FCC ID Code is defined as a single line and the label shall be etched, engraved,

stamped, indelibly printed, or permanently affixed to a permanently attached part of the end product, and be visible at the time of purchase on the exterior of the equipment enclosure.

Contains FCC ID: REWPCB-70Z5

This device complies with Part 15 of FCC Rule. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

5. Final Product User Manuals

The user manual of the final product must include the following statements.

NOTE: 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.

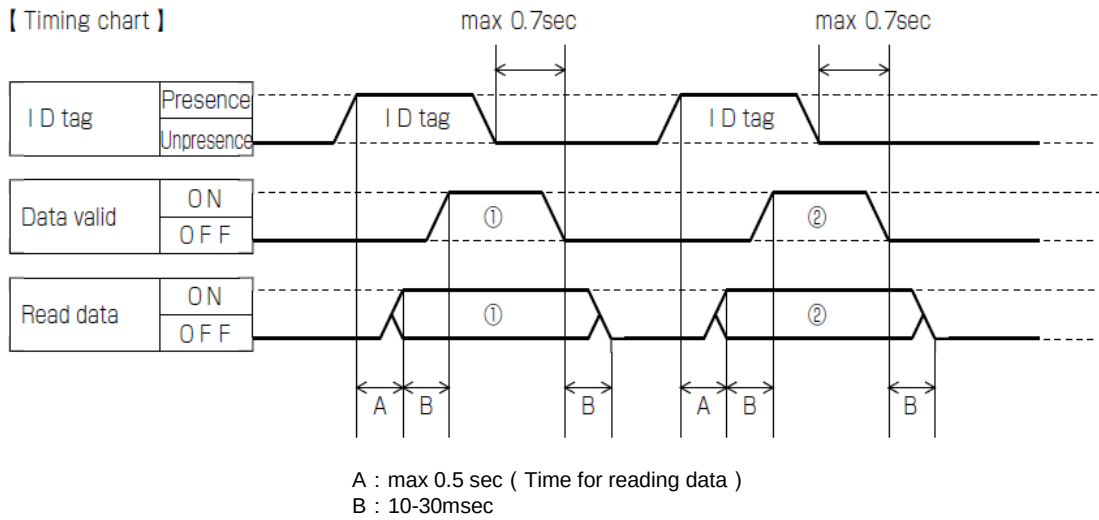
Caution:

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6. Communication with Host computer

Reading data

【 Timing chart 】



[Procedure for Communication]

- (1) The ID reader reads the data of the ID tag automatically as soon as the ID tag comes into the reading area of the reader and outputs the read data from output lines.
- (2) The host computer can read the output lines from D0 to D7 after checking the data valid signal turns ON.

[Notes]

- Data reading should be carried out at interval longer than 0.7 second in reading data of plural ID tags continuously.
- When data check error is detected, the data-valid line is deactivated and other all outputs are not changed and previous status is maintained. In error condition, LED of data valid (DV) would be blinking slowly.