

8bit system  
Read System

Reader

**Z5-AA01N-\_\_**

**Z5-AA01P-\_\_**

Manual



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## Safety Considerations

(Please read this before use)

Before using this products,read this manual carefully and operate properly, paying attention to the safety aspects.

Design considerations

- ◆ 8bit reader together with Datacarrier which are specified by ISO15693 standard comprise the Identification System and may only be used for this purpose in industrial applications.
  - ◆ Even if the abnormality of power supply and this product break down, please design the system so that the whole system acts on the safe side.
  - ◆ About power supply and using conditions, be careful not to exceed the range of specifications.
- Usage considerations
- ◆ Use a regulated power supply, e.g. switch-model type. There is a risk of fire or heat generation exceeds the rated voltage power is being supplied"
  - ◆ "When wiring the processor, follow the chapters containing the wiring diagrams closely, and wire all connections properly. Incorrectly connected wiring may cause malfunction or unexpected problems."
  - ◆ Be sure to turn off the power before cleaning, maintenance and failure treatment.
  - ◆ Do not disassemble or modify the processor. Which may cause failure, malfunction, injury or fire.
  - ◆ To avoid malfunction caused by induction noise, cable should be kept apart from motor or other power cable.
  - ◆ When disposing of the processor, treat it as industrial waste.

## 1. Description

### 1. 1 Description

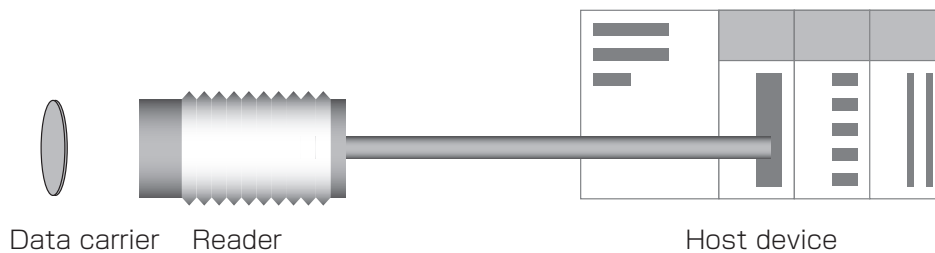
8 bit system is a simple identification system communicating 8 bit data.

This Read-Only system needs no particular program to read data, for the Reader reads data of a Datacarrier automatically when the Datacarrier come into the reading area of the reader.

Datacarrier are used for 8bit system. 8bit system occupies the first three bytes of memory. The first byte (8 bits) is used for customer' s identification data, the second and third bytes are used for data check function by Reader. (see1.3 8bit format)

Reader / Writer of 8bit system is available to write data into a Datacarrier.

### 1. 2. System configuration



- Reader start reading automatically as soon as a Datacarrier comes into its communication area .
- Reader outputs the read data in 8 bits parallel.

Used frequency / 13.56MHz

### 1. 3 8bit system format

8bit system uses Datacarrier which are specified by ISO15693 standard.

Data of this system is stored in a Datacarrier by 8bit format.

User' s data 8 bits are set in address 00 of a Datacarrier. The inverted bits of the user' s data are written in 01 and 02 address. Reader compares three data which are stored 00, 01 and 02 address.

The result of checking is true, Reader outputs 8 bits as the reading data and 1 bit as the data-valid.

If the result is false, LED of Reader blinks slowly as data check error. In this case, all outputs remaind same.

#### [Example]

	Data bit No.								Writing 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

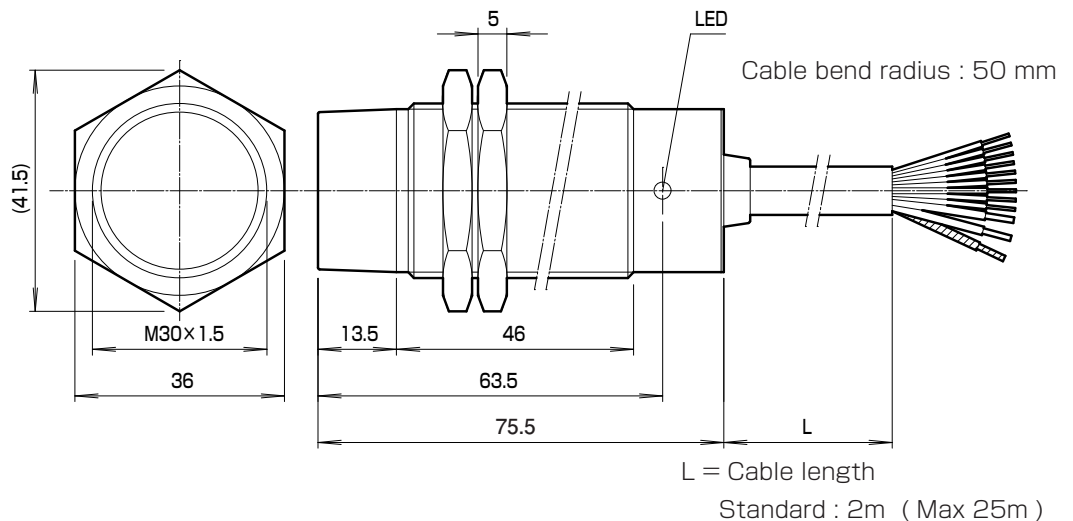
## 2. Specifications

### ■ Specification

Type code	Z5-AA01N-__	Z5-AA01P-__
Output	NPN output	PNP output
Power supply	24V DC +10 / -20% (including ripple)	
Current consumption	max.60mA	
Operating temperature	0...+50°C	
Operating temperature	35...90%RH	
Protection class	IP 67	
Vibration rating	10...55Hz,amplitude 1.5mm,to each axis X-Y-Z for 2 hrs.	
Shock rating	50G, 3 times to each axis X-Y-Z,total 18 times	
Metal mounting	Yes(Not Flush)	
Housing material	case : Nickel plated brass	Active surface : Nylon 12
Standard	CE	
Cable	PUR, Phi 8mm / 2 x 21AWG + 9 x 25AWG	
Weight	180g+Cable 70g/m	
	The ID reader has built-in facilities that use high frequency which acquired type designation(AC-17102 or AC-17101).	

### ■ Dimension

Z5-AA01N-\_\_  
Z5-AA01P-\_\_



Please note that the cable length of an output sensor may not longer than 10m. The CE marking verifies that our products comply with the requirements of EMC directive. The surge test to an output sensor is not carried out. When using an output sensor with cable length longer than 10m, a measure to protect the sensor from serge current should be taken

### ■ LED status

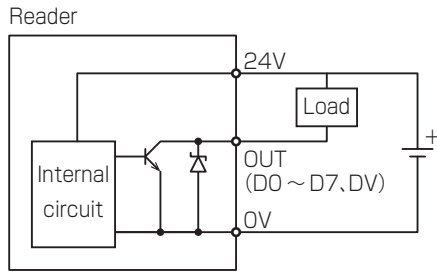
Data Valid Output	Color	Description of the functions
None	Green	(1) Datacarrier present and data are valid ( LED : ON ). (2) Data check error happens ( LED : Slow blinking ) (3) Any of those "ON" output signals that indicate Read data or Data valid is short circuit. ( LED : Fast blinking )

### ■ Output specification

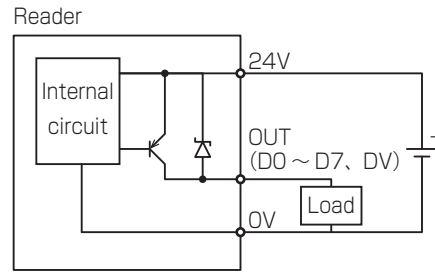
Load voltage	30V DC (max.)
Load current	50mA (max.)
Residual voltage	≤ 1.5V
Leakage current	≤ 0.08mA

■ Output circuit

NPN type : Z5-AA01N-\_\_



PNP type : Z5-A001P-\_\_



■ Output signal

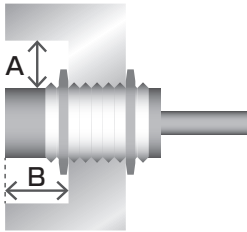
Signals	I/O	Cable color	Meaning
Power supply 24 V	-	White	Connect (+) side of the 24V DC Power supply
Power supply 0 V	-	Pale Blue	Connect (-) side of the DC24V Power supply
Read Data D0	Out	Brown	Output signal of data from bit address 0
Read Data D1	Out	Red	Output data read from Bit address [ 1 ]
Read 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 read data is valid

### 3. Installation and Wiring

#### ■ Installation

##### [ Installation of Reader ]

Install the Reader on flange with M30 nuts which supplied together with the Reader.

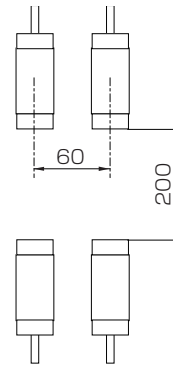


( Tightening torque : 20 Nm )  
The certain clear zone is required around the active surface to avoid influence of surrounding metal.

	A	B
Z5-AA01N-__	20mm	20mm
Z5-AA01P-__	20mm	20mm

##### [ Mutual interference ]

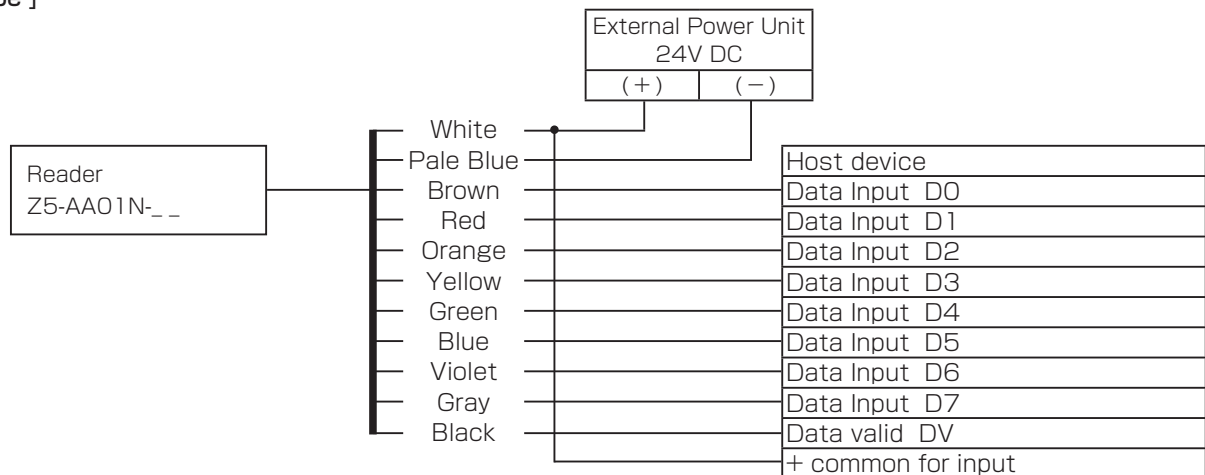
The following distances must be maintained between the individual Reader to avoid mutual interference.



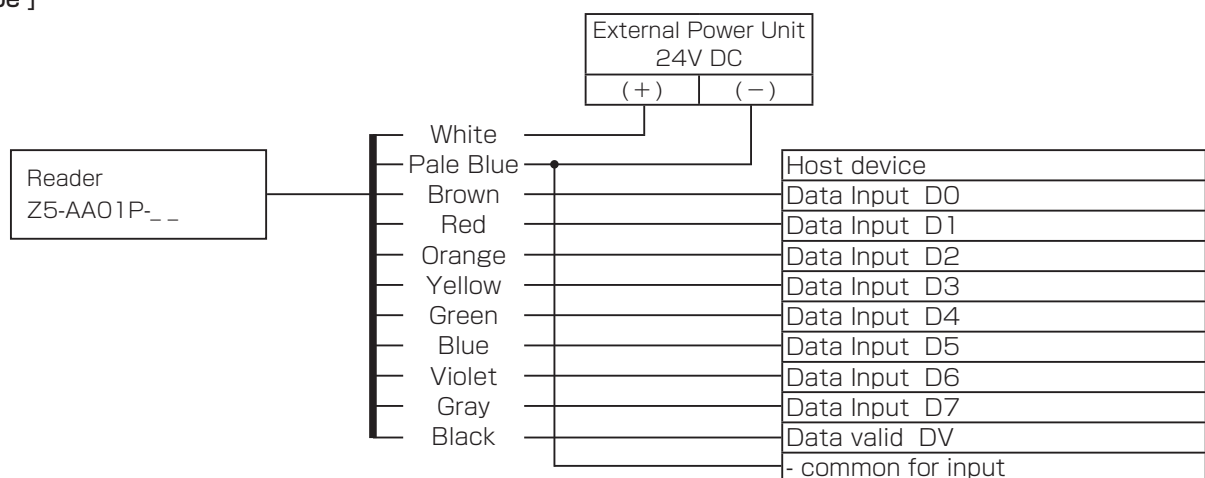
Parallel	60 mm
Face to face	200 mm

#### ■ Wiring

##### [ NPN type ]



##### [ PNP type ]



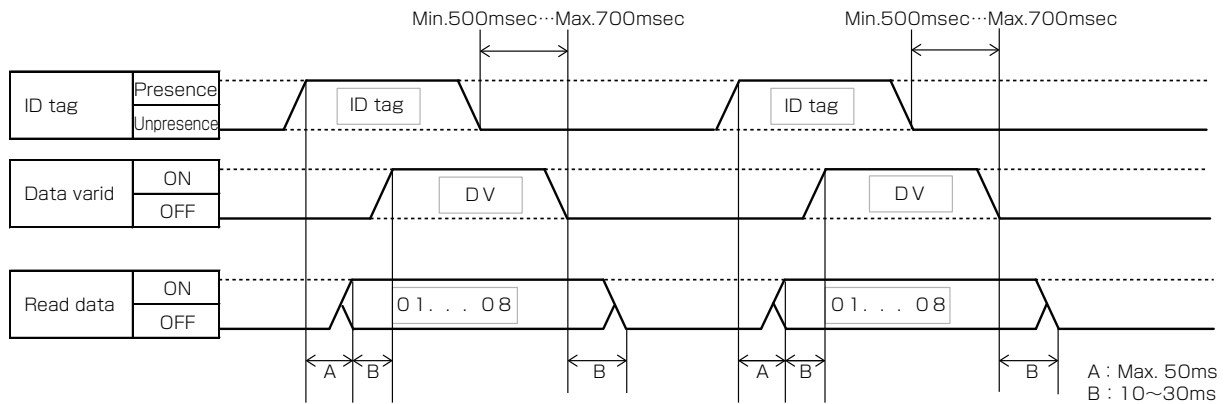
##### [ Attention ]

- When connecting user's cable to Reader, be sure to use the cable of which conductors are bigger than 0.5 mm<sup>2</sup> for power supply line (white, pale blue) and 0.2 mm<sup>2</sup> for signal line (brown ... black).

#### 4. Communication with the External Unit

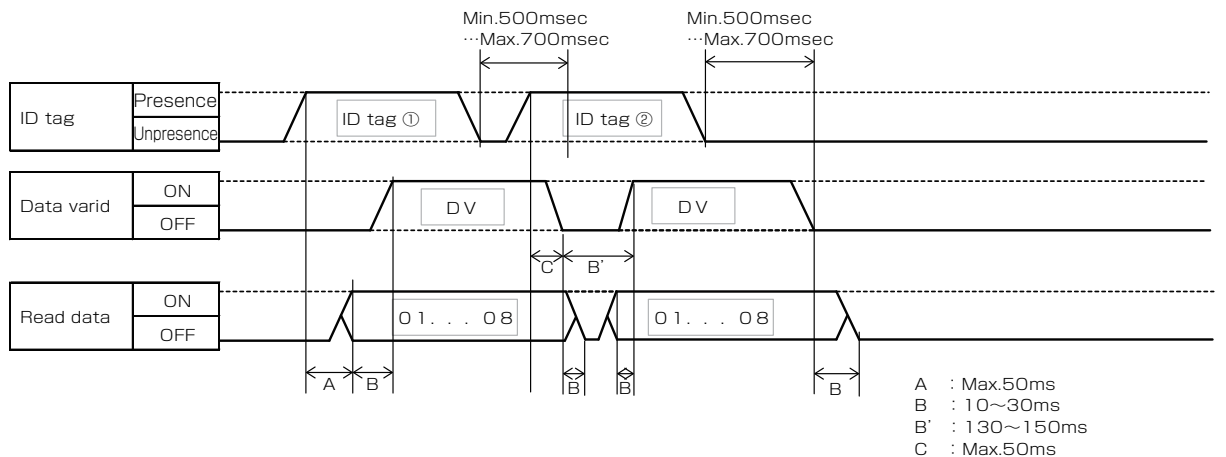
##### ■ Data Reading

【Timing chart 1】



【Timing chart 2】

While the ID tag holds the output data, if the ID tag has entered a communication range



##### [ Procedure for Communication ]

- (1) Reader reads the data of the Datacarrier automatically as soon as the Data carrere comes into the communication area of the reader and set the read data.
- (2) The host computer should start reading from D0 to D7 of Reader after checking the data valid signal turns ON.

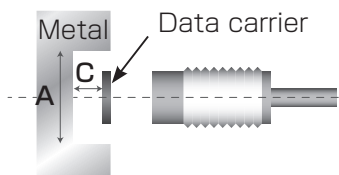
##### « Note »

- Data reading should be carried out at interval longer than 50 msec second In reading data of Datacarrier continuously.
- When data check error occurred, the data valid (DV) remains OFF, and the read data (D0...D7) would not Output. In this condition,LED of data valid (DV) would be blinking (slow).

#### 5.Error Detection

Error description	LED indication	Output signal
Data check error (Chack data collision)	Blinking (slowly)	Data varid : OFF
No Datacarrier	OFF	Data valid : OFF
Short of Output signals.	Blinking (Quickly)	-

## 6. Appropriate Datacarrier and Read distance of 8 bit Reader



To avoid the surrounding metal and mutual interference when you install Reader, please keep area greater than or equal to value shown in below table.

- "Metal mounting" means directly mounted on the metal. but it refers to the absence of metal around except rear of the Data carrier.
- "Non-metal mounting" that ensures a certain distance over the back side of Datacarrier and Metal.

**Type code : Z1-EA02-128**  
Size :  $\phi$  9.5 x 2.7 mm



		Non-metallic area (A : 30mm)	
Mouting		Metal mounting (C: 0mm)	Non metal mounting (C: 20mm)
Communication distance (mm)		0~5.5	0~7
Center offset (mm)	Distance 0mm	$\pm 4$	$\pm 4$
	4mm	$\pm 2$	$\pm 3$
	5mm	$\pm 0$	$\pm 2$
	7mm	—	$\pm 0$
	10mm	—	—

**Type code : Z1-FA01-128**  
Size :  $\phi$  16 x 0.9 mm



		Non-metallic area (A : 56mm)	
Mouting		Metal mounting (C: 0mm)	Non metal mounting (C: 20mm)
Communication distance (mm)		No	0~18
Center offset (mm)	Distance 0mm	—	$\pm 7$
	4mm	—	$\pm 7$
	8mm	—	$\pm 8$
	12mm	—	$\pm 7$
	16mm	—	$\pm 4$
	18mm	—	$\pm 0$

**Type code : Z1-EC02-128**  
Size :  $\phi$  26 x 3.4 mm



		Non-metallic area (A : 60mm)	
Mouting		Metal mounting (C: 0mm)	Non metal mounting (C: 20mm)
Communication distance (mm)		0~12	0~12
Center offset (mm)	Distance 0mm	$\pm 8$	$\pm 8$
	4mm	$\pm 8$	$\pm 8$
	8mm	$\pm 5$	$\pm 5$
	10mm	$\pm 2$	$\pm 2$
	12mm	$\pm 0$	$\pm 0$
16mm	—	—	

**Type code : Z1-FB01-128**  
Size :  $\phi$  28 x 0.3 mm



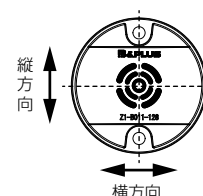
		Non-metallic area (A : 70mm)	
Mouting		Metal mounting (C: 0mm)	Non metal mounting (C: 20mm)
Communication distance (mm)		No	0~30
Center offset (mm)	Distance 0mm	—	$\pm 14$
	4mm	—	$\pm 14$
	8mm	—	$\pm 14$
	12mm	—	$\pm 13$
	16mm	—	$\pm 12$
18mm	—	$\pm 12$	

**Type code : Z1-B011-128**  
Size :  $\phi$  50 x 8.3 mm



		Non-metallic area (A : 70mm)			
Mouting		Metal mounting (C: 0mm)		Non metal mounting (C: 20mm)	
Moving direction of Data carrier.		Length-ways	Width-ways	Length-ways	Width-ways
Communication distance (mm)		0~12		0~22	
Center offset (mm)	Distance 0mm	$\pm 17$	$\pm 9$	$\pm 19$	$\pm 11$
	4mm	$\pm 15$	$\pm 8$	$\pm 19$	$\pm 12$
	8mm	$\pm 10$	$\pm 6$	$\pm 18$	$\pm 12$
	10mm	$\pm 6$	$\pm 4$	$\pm 17$	$\pm 12$
	12mm	$\pm 0$	$\pm 0$	$\pm 16$	$\pm 12$
	16mm	—	—	$\pm 13$	$\pm 9$
	20mm	—	—	$\pm 6$	$\pm 4$
	22mm	—	—	$\pm 0$	$\pm 0$

Z1-B011-128 has different offset depending on the moving direction of Data carrier. When it's installed as described below, up and down movement means vertical direction, left and right movement means lateral direction.



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\*Specifications subject to change without notice.