



# RFID 125KHz EM read module

PIEM- AWAS-NEU1

Ver.20.1

## ● Introduction

The 125KHz proximity reading module equipped with the ASK decoding circuits to read the EM compatible contactless cards or tags into ABA, Wiegand & ASCII formats. In this version, we output the Wiegand 26 bits or ASCII or ABA signal by jumper selection. Additionally, we supported various module versions to answer different requirements, please refer to our products catalog.



## ● Features

1. 125KHz proximity reading for EM, TEMIC cards.
2. Embedded with internal antenna or external bigger antenna.
3. Wide input voltage range: 4.5~5.5V.
4. Epoxy potted for weather resistant with reliable quality.
5. Compact size with high performer.
6. Suitable for easy design block for tags or cards reading, such as access reader, fingerprint reader or industrial proximity application.

## ● Specification

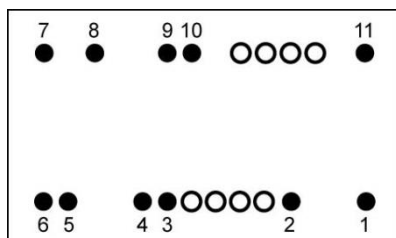
Dimensions	40.5(L) x 24(W) x 11(H) mm	
Net weight	17g ± 5%	
Enclosure material	ABS	
Card	EM 4001, EM 4102 or compatible / TEMIC 5557	
Operation frequency	125KHz	
Reading range	Proximity card (Thickness:0.8mm)	7.5±1 cm(+4.5V)
		7.5±1 cm(+5.0V)
		7.5±1 cm(+5.5V),
	Proximity card (Thickness:1.8mm)	8.5±1 cm(+4.5V)
		8.5±1 cm(+5.0V)
		8.5±1 cm(+5.5V),
	Specific card	10±1cm(+4.5V)
		10±1cm(+5.0V)
		10±1cm(+5.5V)
Output format	Wiegand 26 or ASCII(8 byte) or ABA(14D)	
UART format	9,600 bps , 8, N, 1	
Power requirements	4.5~5.5V.	
Standby current	29.7mA ± 5%(+4.5V) , 31.5mA ± 5%(+5V) , 34.2mA ± 5%(+5.5V)	
Operating current	30mA ± 5%(+4.5V) , 31.5mA ± 5%(+5V) , 34.2mA ± 5%(+5.5V)	
Operating temperature	-10℃ ~ 75℃	
Storage temperature	-10℃ ~ 85℃	

## ● Pin assignments

Pin No.	Description	Wiegand	ABA	ASCII
Pin 1	Zero Volts and Tuning Capacitor Ground	GND 0V	GND 0V	GND 0V
Pin 2	Power	DC 4.5~5.5V.	DC 4.5~5.5V.	DC 4.5~5.5V.
Pin 3	Format selector(+/-)	Connected to +5V	Connected to PIN8	Connected to GND
Pin 4	Card present output	No function	Card Present output	No function
Pin 5	Data 0	DATA 0	Data	CMOS
Pin 6	Data 1	DATA 1	Magstripe clock	TTL(to IC UART)
Pin 7	N.C.	N.C.	N.C.	N.C.
Pin 8	LED / Buzzer	Beeper/LED	Beeper/LED	Beeper/LED
Pin 9	N.C.	N.C.	N.C.	N.C.
Pin 10	Embedded Antenna and Tuning Capacitor Ground	Antenna	Antenna	Antenna
Pin 11	Embedded Antenna	Antenna	Antenna	Antenna

※ CMOS & TTL in ASCII output could support RS-485 interface.

## ● Bottom view



1	GND
2	Power DC 4.5~5.5V
3	Format selector(+/-)
4	Card present
5	Data 0
6	Data 1 (RS-232)
7	N.C.
8	LED(Driver)
9	N.C.
10	Antenna
11	Antenna

## ● Data formats

### Output data structure UART output

STX(02Hex)	DATA(10 ASCII)	CHECK SUM(2 ASCII)	CR	LF	ETX(03Hex)
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One hex byte (Include 2 ASCII characters), check sum is the " Exclusive OR" of all the 5 hex bytes from (A<sub>1</sub>A<sub>2</sub> till E<sub>1</sub>E<sub>2</sub>)

### Wiegand26 output

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
P	E	E	E	E	E	E	E	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	P
Summed for even parity (E)													Summed for Odd parity (O)												

P=Parity start bit and stop bolt

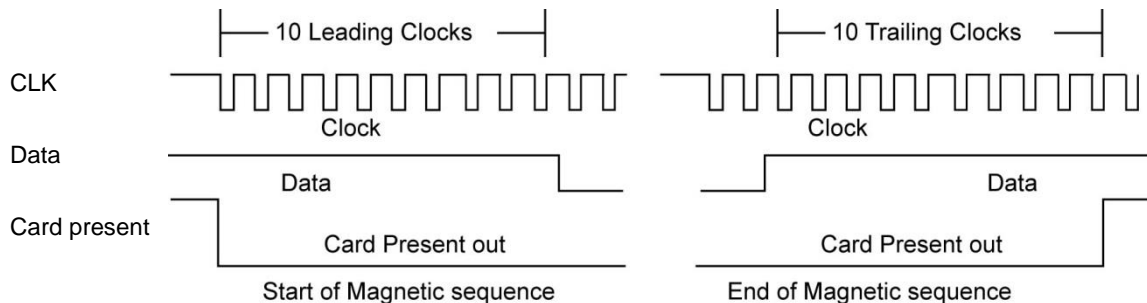
Even parity "E" is generated by summing bit b2 until b13; Odd party "O" is generated by summing bit b14 until b25

## Output data ABA output

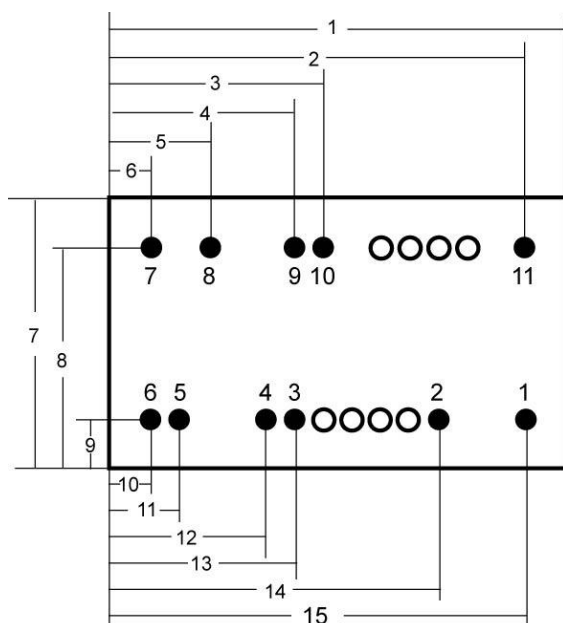
10 Leading Zeros	SS	Data(14 digits)	ES	LCR	10 Ending Zeros
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SS is the start character of 11010, ES is the end character of 11111, LRC is the longitudinal redundancy check.

## Start and end sequences for magnetic timing



## ● Dimensions(Unit: mm)



No.	Unit: mm
1	40.5
2	36
3	18
4	15.5
5	8
6	3
7	24
8	19
9	3.6
10	3
11	5.5
12	13
13	15.5
14	28.2
15	35.8

## ● Application fields

POS system   Time attendance   Access control   Logistics   Production control



Specifications subject to change without notice for further modification.