

Operation Guidance

EL300-0/381-0/382-0/386-0/387-0/390-0

EM 125kHz Proximity Reader

(RS232,Wg26 or ABA1,2 interface)

1. Introduction:

EL3xxx is an access control door reader family with several casing versions ,suitable for different environment application. It is designed for reading code from EM4100 or compatible read-only transponders.

2. Main features:

- Low cost solution
- Proximity access control door reader
- Multi-interface on one board, RS232, Wiegand26 or ABA Track1/ Track 2 or others on request
- Electric potted for weather proof use
- Economic and compact design

3. Specification

Frequency	125kHz
Antenna	integrated antenna
Read distance	10-15mm (depending on transponder)
Supply Voltage/Current	7.5VDC-13.8VDC, 60mA
Reading response time	200ms
Operating Temperature	-20°C to +60°C
Interface	RS232,Wiegand26 or ABA Track1/ ABA Track 2 (RS485 on request)
Card format	EM 4100 or compatible
Encoding	Manchester 64-bit, modulus 64
Indoor/outdoor	both, electric potted, weatherproof

4. Cable description

Color	RS232	Wiegand 26	ABA1	ABA2
Gray	D1 / DATA	D1	DATA	DATA
Blue	D0 / CLK	D0	CLK	CLK
Brown	CP	—	CP	CP
Orange	—	NC	GND	NC
Yellow	—	NC	GND	GND
Purple	LED/BEEP			
Green	RXD			
White	TXD			
Red	VCC			
Black	GND			

[Notice]

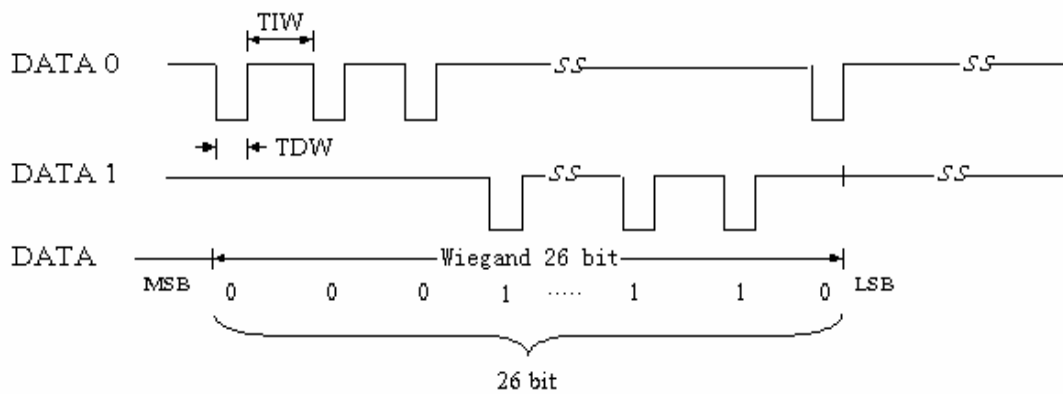
NC : Not Connected

5. Wiegand 26 format:

Bit	0	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	
Note	P	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	P
	P	E	E	E	E	E	E	E	E	E	E	E	E														
														0	0	0	0	0	0	0	0	0	0	0	0	0	P

Note:

E: Even 0: odd P: parity bit D: DATA



SYMBOL	Parameter	Limits Min.	Limits Max.	Type	UNITS
TDW	Data Pulse width time	20	100	50	uS
TIW	Data Pulse interval time	0.2	4	2	mS

6. RS232 format:

- 1) Baud rate: 9600bps
- 2) Parity: no
- 3) Data bits: 8
- 4) Stop bits: 1

- RS232 interface software is programmed in the IFD4001 microcontroller which can transfer the 40 bits data (i.e., 64 bits excluding a bit header and 15 bit parity) into a 10 digits ASCII code. For example: The data code output from the tag is:

B0-----,B9----,B14---,B19--,,B24--,,B29--,B34---,B39--,,B44--,,B49---,B54---,B59-B63
 11111111,10001,01001,11000,00101,10100,01100,11101,00011,10010,01010,11010

Refer the data format table:

1	1	1	1	1	1	1	1	1
			ROW0=1	1	0	0	0	PD0=1
			ROW1=2	0	1	0	0	PD1=1
			ROW2=3	1	1	0	0	PD2=0
			ROW3=4	0	0	1	0	PD3=1
			ROW4=5	1	0	1	0	PD4=0
			ROW5=6	0	1	1	0	PD5=0
			ROW6=7	1	1	1	0	PD6=1
			ROW7=8	0	0	0	1	PD7=1
			ROW8=9	1	0	0	1	PD8=0
			ROW9=A	0	1	0	1	PD9=0
				PC1=1	PC1=1	PC2-=0	PC3=1	0

From the RS232 interface in the computer will get the 10 digits ASCII code are: 38 34 3C 32 3A
 36 3E 31 39 35.

[Notice]

The default output testing tools for RS232 output is HyperTerminal.

If you want to use other testing tools to test the output, please make sure that tool is supporting ASCII code input; otherwise, the output will have unknown characters.

7. ABA Track 1 output format:

(一) Data

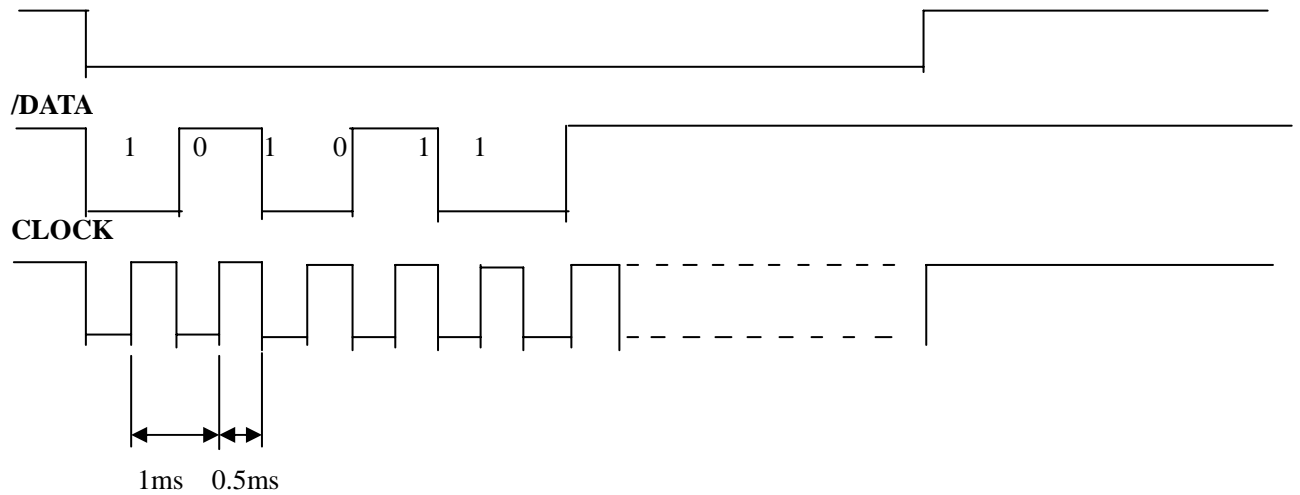
- (1) Starting Bits: Fifty "0"
- (2) Starting character: B (11010, Lower bit ahead, sort by 1248P)
- (3) Card ID: 0000000000-9999999999 (10 bits decimal number)
- (4) End character: F (11111, lower bit ahead, sort by 1248P)
- (5) LRC vertical redundant checking sum (BCC)
- (6) Ending Bits: Fifty "0"
- (7) Odd check apply on each character
- (8) All data output: 0 is high level output, 1 is low level output

(二) Frame format

Starting bits	Starting character	Card info	Ending character	BCC	Ending Bits
Fifty "0"	B	10BYTES	F	5BITS	Fifty "0"

When sending characters, lower bit is in front of high bit

CARD IN



8. ABA Track 2 output format:

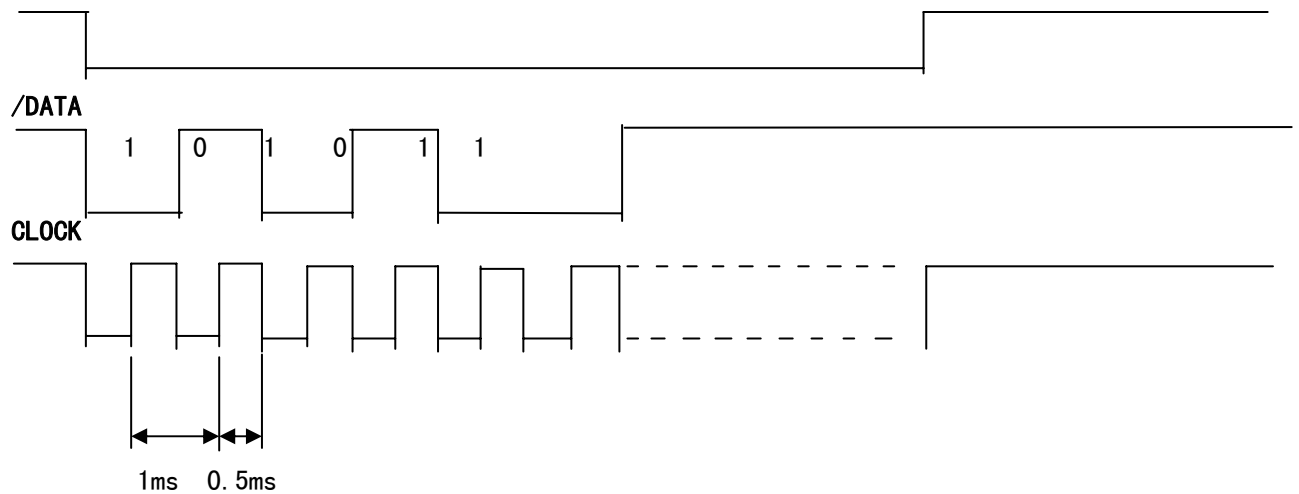
(一) Data

- (1) Starting Bits: ten "0"
- (2) Starting character: B (11010, Lower bit ahead, sort by 1248P)
- (3) Card ID: 0000000000-9999999999 (10 bits decimal number)
- (4) End character: F (11111, lower bit ahead, sort by 1248P)
- (5) LRC portrait redundant checking sum (BCC)
- (6) Ending Bits: Five "0"
- (7) Odd check apply on each character
- (8) All data output: 0 is high level output, 1 is low level output

(二) Frame format

Starting Bits	Starting character	Card info	End character	BCC	Ending Bits
ten "0"	B	10BYTES	F	5BITS	Five "0"

CARD IN



(三) LRC portrait redundant checking sum enable method

LRC character apply following method to calculate: exclude Odd check bit, regulate each bit in LRC character, it will ensure sum of the bits which is going to be encode at response position is even number.

Magstripe data:	B0	B1	B2	B3	P (odd check bit)
Starting character:	1	1	0	1	0
First card character:	1	0	0	0	0
Second card character:	0	1	0	0	0
Third card character:	1	1	0	0	1
.....
Ending character:	1	1	1	1	1
LRC character:	0	0	1	0	0

9. Evaluation Kit:

1. About the evaluation Kit:

An easy used testing and evaluation kit is provided, plug and play. Content of the Kit:

- EL3xxx(RS232 Series interface) 1pc
- Power Supply 1pc
- Communication cable 1pc
- Testing board 1pc
- Transponder 5pcs (ISO card, Clamshell, keyfob, disc tag)

2. How to use the evaluation kit:

- 1) Connect EL3xxx on the testing board. Refer to 4 “cable description”
- 2) Connect the communication cable to PC.
- 3) Power the reader by connecting the adaptor.
- 4) execute Hyper Terminal
- 5) Select the right COM port
- 6) Make configuration as below:
 - Baud rate 9600
 - Data bits 8
 - Parity no
 - Stop bits 1
 - Flow control no
- 7) Put a card in the RF field of the reader and the ID number of the card will be shown on the screen of PC.