

125K-RW-USB-D2

125K reader/writer with USB interface communication protocol

Com port setting

baud rate : 9600 baud rate
 data length : 8 bit
 partial check : none
 stop bit : 1 bit

Protocol Description

Communication control string

Index	String (Hex)	Function
STX	0x02	Start string
ETX	0x03	End string
ENQ	0x05	Check com port status
NAK	0x15	Com port busy , need wait
ACK	0x06	Com port ready for communication
DLE	0x10	If found above control string , need insert DLE then XOR it and the value follow the DLE

Standard Data format (All data are in Hex)

STX	DATA	ETX	BCC
0x02	Length	0x03	
	Byte length request for BCC		

Remark : BCC calculation method

XOR all the data byte and ETX (Except STX and BCC)

For example :

Send data : 0x52 0x6f 0x02 0x15

$$\begin{aligned}
 \text{BCC} &= 0x52 \wedge 0x6f \wedge 0x02 \wedge 0x15 \wedge 0x03 \\
 &= 0x29
 \end{aligned}$$

data format as follow :

D0	D1	D2	D3	D4	D5	D6	D7	D8
0x02	0x52	0x6F	DLE (0x10)	0x12	DLE (0x10)	0x05	ETX (0x03)	BCC (0x29)
			String 0x02		String 0x15			

Before communication , can us the ENQ(control string) to check the com port status.

ENQ(0x05)

Function : check com port status

Send : ENQ (0x05)

Return :

NAK - reader busy , need wait

ACK - reader ready for communication

No return – time out , No communication

If found above control string , insert DLE then XOR it and the value follow the DLE

Application layer

Command format



C Structure :

Struct DownlinkData

```
{
    Char      command;
    Char      WordAddress;      ;(No this range for some command)
    Char      WordData[4]
};
```

Command set

Operation	Command	Address	Data	Description
Write word	0xa1	1 Byte range: 0,1,2,3,4,5,6 Total 7 word	32 bit data	If card protected, Need password verify before write word
Read word	0xa2	1 Byte range : 0,1,2,3,4,5,6 Total 7 word	NIL	If card protected, Need password verify before write word
Write Password	0xa3	NIL	32 bit user password	Before write new password, need verify the original password firstly
Verify	0xa4	NIL	32 bit password	Verify password
Write EM4100 ID	0xa5	NIL	24 bit data (MSB first) 00 HH MM LL	If card protected, Need password verify before write word
AutoRead	0xa7	NIL	3 byte	1byte command (0-disable / 1-enable) +2 byte password (55 AA)

Reader return message



C structure :

```
Struct UplinkData
```

```
{
```

```
    Char    status;
```

```
    Char    WordData[4]
```

```
}
```

remark : data can be ignored if No data return

Return status

Status	Description
0x00	Operation correct
0xff	Write card failure
0xfe	Read card failure
0xfd	Password error
0xfc	Card type error
0xfb	Address error
0xfa	Command error
0xf8	Running Auto read mode (EM4100),exit this mode if need issue other command (run command 0xa7)