865-53 Rev 1 USB Multi-tag Desktop Reader

Data Sheet

The USB Multi-tag Desktop reader is a dual frequency RFID proximity operating simultaneously on both 13.56MHz and 125kHz. It can read the unique ID or tag number from a variety of cards and tags and connects to a PC via USB. It enumerates as a CDC (Communication Device Class) and appears as a virtual COM port. It outputs the transponder code to a PC running terminal emulation software.

A 10 way DIP switch on the back of the unit is used to select the required output format. A green LED and a beeper are used to indicate a successful read and a red LED indicates an error condition.

Specifications

- Power requirements: USB bus powered. Current consumption 60 mA (typical)
- Mini B USB socket
- Operating Frequencies: 13.56 MHz and 125kHz
- Cards supported (13.56MHz): Mifare Std, Mifare Plus S/X, Ultralight, DESFire, NTAG2xx, iCLASS
- Cards supported (125kHz): HID H10301 (26 bit format), H10304 (37 bit format), EM4001 family (40 bit), TEMIC e5550 and equivalent devices
- Output formats supported: Standard or wiegand output (site + user code), hexadecimal or decimal, with or without leading zeros
- Length formats: fixed 56, 48, 40, 32, 24 or16 bits; or variable bit length according to UID size
- Output format options: ID only or packet format
- Continuous output with tag in field or single transmission
- Operating temperature range: 0 ºC to +50 ºC
- Weight: 55 grams
- Dimensions: Reader 100 x 59 x 21 mm

Connections

To install the desktop reader:
Connect the reader to the PC with a mini B USB cable. With the PC running a terminal emulator, choose and open the assigned Virtual COM Port (baud rate is handled automatically). The reader is now ready to accept a card and output the ID code.

Output Mode Selection

The 10 way switch is used to select the output format, length and termination as per the following tables:

Leading zeros (SW1)

	SW1
Leading zeros included	ON
Leading zeros suppressed	OFF

Decimal/hexadecimal (SW2)

	SW2
Decimal format	ON
Hexadecimal format	OFF

Length (SW3 – SW5)

The reader reads all bits of the card ID but many applications require a shorter number. The length of the number is determined by the number of bits on the card and the length switch setting:

	SW3	**SW4**	**SW5**
56 bit	OFF	OFF	OFF
48 bit	OFF	OFF	ON
40 bit	OFF	ON	OFF
32 bit	OFF	ON	ON
24 bit	ON	OFF	OFF
16 bit	ON	OFF	ON
Variable length – 32 bit , 56 bit or 64	ON	ON	OFF

Notes:
1. For Mifare cards the reader reads all available bits of the UID, 56 bits for 7 byte UIDs and 32 bits for 4 byte UIDs. The length setting truncates the hexadecimal number to required number of bits. Decimal format operates on truncated hexadecimal UID. For the variable length output, the number of bits is automatically chosen to match the number of bits available from the card, 4 byte UIDs will output 32 bits and 7 byte UIDs will output 56 bits.
2. For EM format cards the ID is 40 bits, length setting truncates the hexadecimal number to required number of bits. Decimal format operates on truncated hexadecimal ID: 40 bit outputs 13 digits; 32 bits outputs 10 digits; 24 bit outputs 8 digits; 16 bit outputs 5 digits
3. For HID type cards the length is determined by the card data and these switch settings are ignored. Decimal format operates on truncated hexadecimal ID: 37 bit cards output 13 digits; 34 and 26 bit cards output 8 digits
4. For iCLASS cards the ID is 64 bits (8 byte CSN)

Order (SW6)

The UID number of Mifare cards is sometimes used in the direction with LSB specified first, the order can be set:

	SW6
Least significant byte first	ON
Most significant byte first	OFF

Note:
Applies to Mifare and iclass cards, does not affect HID or EM format cards.

Combi-tag Precedence Selection (SW7)

	SW7	
EM Precedence	OFF	
Mifare Precedence	ON	

Notes:
1. Combi-tags or dual frequency cards/tags contain both 125kHz EM and 13.56MHz Mifare functionality. Precedence selection chooses which ‘card’ to read and output ID from. When Combi-tags are not used, select OFF

Output formats (SW8)

	SW8
Standard	OFF
Wiegand (site code + card number/user code)	ON

Notes:
1. Standard format, all the bits on the card are assumed to be the card number
2. Wiegand format, for H10301 cards: 8 msbits are the site code and 16 lsbits are user code; for H10304 cards: 16 msbits are the site code and 19 lsbits are the user code; for Mifare, iCLASS and EM cards: truncate to 24 bits with 8 msbits as site code and 16 lsbits as user code – length settings (SW3, SW4, SW5) are ignored. Leading zeros always included

Packet format (SW9)

The ID can be either output as a plain number or as a packet with control characters

	SW9
Plain output	OFF
Formatted output	ON

Packet structure:

STX(02h)	DATA(ASCII)	CR(0Dh)	LF(0Ah)	ETX(03h)

Single/Continuous transmission mode (SW10)

	SW10
Single	OFF
Continuous	ON