

# 865-52 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 outputs the code in the form of keystrokes which enables the user to capture the transponder code into any PC application which accepts keyboard entry.



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.

The reader has a mini B USB socket and when connected to the PC the device enumerates as a Human Interface Device (HID class).

### Specifications

- Power requirements: USB bus powered. Current consumption 60 mA (typical)
- 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 or 16 bits; or variable bit length according to UID size
- Termination options: None, ENTER
- Operating temperature range: 0 °C to +50 °C
- 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.

## 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 reverse direction with LSB specified first, the order can be set:

|  | SW6 |
|--|-----|
| Reverse order – least significant byte first | ON  |
| Normal order – 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.

## 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

## Termination (SW9)

The reader will generate the following keystroke after the number

|       | SW9 |
|-------|-----|
| None  | OFF |
| ENTER | ON  |

## Keyboard layout (SW10)

|                        | SW10 |
|------------------------|------|
| English keyboard       | OFF  |
| International keyboard | ON   |

If SW10 is ON the desktop reader outputs ASCII codes instead of scancodes. This has the advantage of being keyboard independent, but the output speed is slower.

