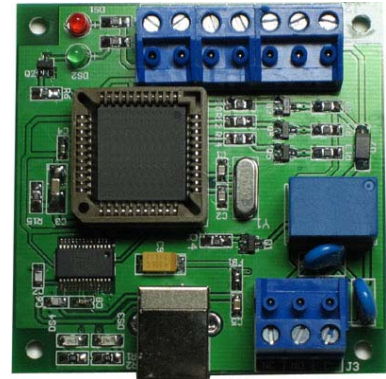# Wiegand to USB Converter

**MA1955** is a dual Wiegand port Wiegand to USB converter. The USB interface is implemented as a Virtual COM Port (VCP). When Wiegand data is received, the MA1955 will automatically converts the Wiegand data from 3-bit up to 42-bit to a formatted ASCII string on the USB port. In a reverse process, when the formatted ASCII string is used as input to the USB port of the converter, the converter can convert the formatted ASCII string to Wiegand data format and send out via separated Wiegand port. Commands can be sent to the MA1955 to control the on board relay, green LED and the connected reader buzzer and reader LED.
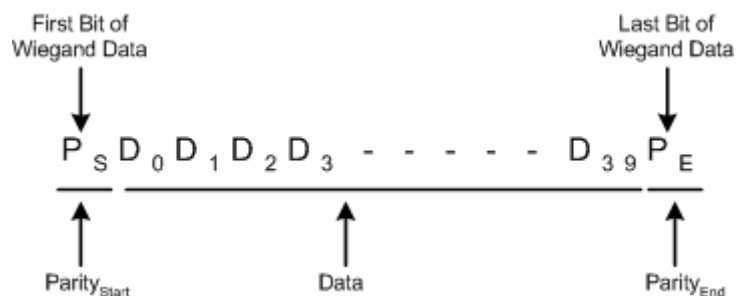
# 1. Specification

## 1.1 Communications:

USB Type B interface. 9600 BPS ASYNC, 8 bits, 1 Stop, No Parity.

## 1.2 Wiegand Data Format

The format of the Wiegand data is shown as follows:



---

## 1.3 USB Interface Data Format

The format of the USB interface data is in the form of 16-byte ASCII string (In Hex Format) as follow.



The Parity Character P is defined as follow.

| RS232 Side | Wiegand Side | |
|---|---|---|
| P | $P_S$ | $P_E$ |
| 0 | 0 | 0 |
| 1 | 0 | 1 |
| 2 | 1 | 0 |
| 3 | 1 | 1 |

## 1.4 Command Data

| Command (4 Byte Hex Value) | Description |
|---|---|
| $02_H31_H30_H03_H$ | Turn on Reader Green LED |
| $02_H31_H31_H03_H$ | Turn off Reader Green LED |
| $02_H31_H32_H03_H$ | Toggle LED |
| $02_H32_H30_H03_H$ | Turn on Reader Buzzer |
| $02_H32_H31_H03_H$ | Turn off Reader Buzzer |
| $02_H33_H30_H03_H$ | Turn on Converter Status LED |
| $02_H33_H31_H03_H$ | Turn off Converter Status LED |
| $02_H34_H30_H03_H$ | Turn on Converter Relay |
| $02_H34_H31_H03_H$ | Turn off Converter Relay |
| $02_H36_H30_H03_H$ | Turn on Reader Red LED |
| $02_H36_H31_H03_H$ | Turn off Reader Red LED |

**MaCaPS Inc.**
**PO Box 347,**
**Northboro, MA 01532**
**USA**

**Phone: (508)393-0573**
**Fax: (508)329-2015**
**Email: sales@macapsinc.com**
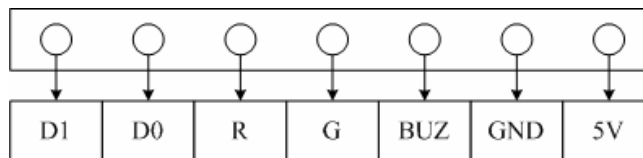**http://www.macapsinc.com**

# 2. Connectors:

There are total 2 pluggable connectors and one USB Type B connector located on the MA1900 board serving different functions as described below.

| Connector Symbol | Description |
|---|---|
| J1 | USB Type B connector |
| J2 | Wiegand Reader Port |
| J3 | Relay Output |

## 2.1 Connector J1

USB Type B connector.

## 2.2 Connector J2
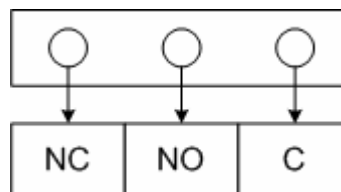


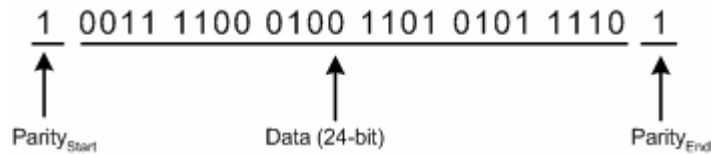| Connector J2 Port Assignment | |
|---|---|
| Designator | Description |
| D1 | Wiegand Data 1 |
| D0 | Wiegand Data 0 |
| R | To Reader Red LED or Wiegand Data 1 Output |
| G | To Reader G LED or Wiegand Data 0 Output |
| BUZ | To Reader BUZ |
| GND | To Reader Ground |
| 5V | To 5V Reader Supply. **(Output only, DO NOT connect external power)** |

## 2.3 Connector J3

| Connector J3 Port Assignment | |
|---|---|
| Designator | Description |
| NC | Normally Open |
| NO | Normally Close |
| C | Common |

# 3. Conversion Example

## 3.1 Wiegand to USB Interface

Input: Wiegand (26-bit)

```
1  0011 1100 0100 1101 0101 1110  1
↑                  ↑                ↑
Parity_Start      Data (24-bit)    Parity_End
```

Output: 16-byte ASCII string on USB port

```
*  2  6  #  0  0  0  0  3  C  4  D  5  E  3  C  r
      ↑        ↑                       ↑    ↖
26-BIT Wiegand     Data (10-byte)     Parity  Carriage Return Hex(0D)
```

## 3.2 USB Interface to Wiegand

Input: 16-byte ASCII string on USB port

```
*  2  6  #  0  0  0  0  3  C  4  D  5  E  3  C  r
      ↑        ↑                       ↑    ↖
26-BIT Wiegand     Data (10-byte)     Parity  Carriage Return Hex(0D)
```

Output: Wiegand (26-bit)

```
1  0011 1100 0100 1101 0101 1110  1
↑                  ↑                ↑
Parity_Start      Data (24-bit)    Parity_End
```