Overview

The integrated iCLASS SE Reader and wiegand decoder assembly is comprised of a commercial iCLASS R10 SE reader that operates in conjunction with a custom embedded microcontroller circuit, OLED display and an optional removable memory card. When a credential is read, the wiegand data stream is captured, decoded, displayed and then optionally stored in a standard ".txt" file that can be easily read on any personal computer. The unit is totally self-contained and requires no external components to function.

Some of the main features of the unit are as shown below.

- Reads,decodes and captures data from any iclass or iclass SE credential (Keyset1 or Keyset2).
- Displays all card information including wiegand code, format, facility code, and card number.
- Supports multiple card formats including 26-bit, 34-bit, 35-bit, 36-bit, 37-bit and 46-bit.
- PIC32 Microcontroller used to manage all decode, display , and SD card functions.
- SD card stores all data from every credential read (when installed).
- Utilizes low power 128x64 Organic LED (OLED) display.
- Integral 3.7Vdc 350 mAh Rechargeable Lithium Battery.
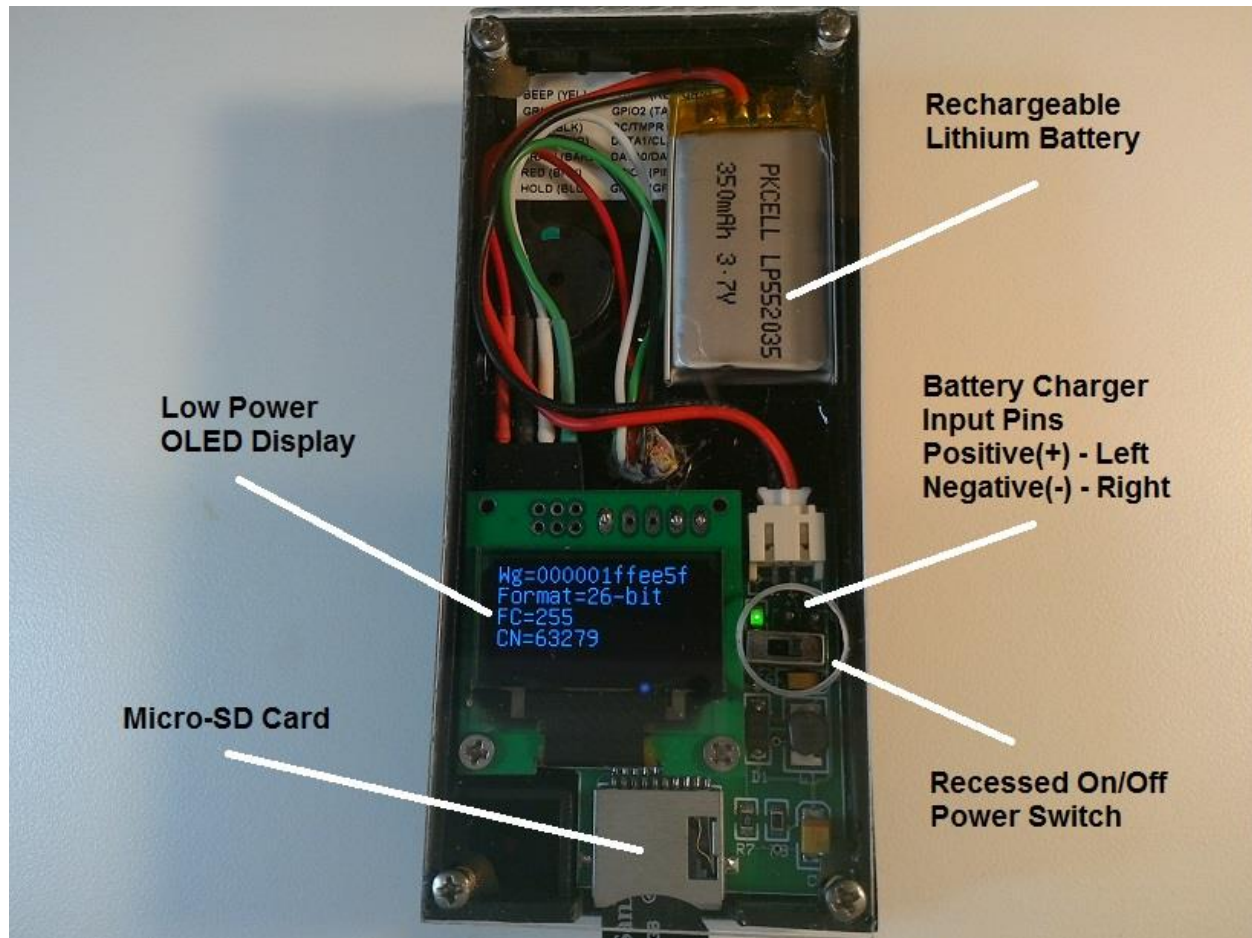- Clear acryllic cover protects all internal electronic components.

Figure 1. iClass SE Wiegand Decoder Rear View

Setup / Operation:

1. Install a standard micro-SD card into the slot located at the bottom of the reader. When looking at the back of the reader the SD card should be inserted with the gold contacts facing down.
[Note: Installation of the micro SD card is totally optional and is only required if the user desires to capture all credential data that is read by the reader.]

2. Turn on the unit using the small slide switch located on the right side of the display. The switch is recessed beneath the acryllic cover to prevent accidental power switching.
[Note: A small non-metallic object (like a ballpoint pen) can be used to turn the unit on and off. The use of a metallic object is discouraged since the battery charge terminals above the switch could be accidently shorted.]

3. After allowing a 4-second delay for the reader to power up, the display should indicate one of the three messages shown below based on the state of the optional micro-SD card.

```
** No SD Card **
```
No SD Card Detected.
Wiegand Data will be
displayed but not stored.

```
** SD Card Found **
Wieg.txt exists
```
SD Card Detected.
Existing storage file
detected.
Wiegand Data will be
displayed and stored.

```
** SD Card Found **
Wieg.txt created
```
SD Card Detected.
No storage file found.
A new file will be created.
Wiegand Data will be
displayed and stored.

4. Place a credential near the reader. The wiegand information sent out by the reader is captured and displayed. A typical card read is shown in the Figure 2 example below.
Line 1 displays the hexadecimal wiegand code that was received from the reader.
Line 2 displays the wiegand code length/format information.
Line 3 displays the decoded Facility Code information.
Line 4 displays the decoded card number information.
[Note: The access control industry supports numerous credential formats that use the same bit length. The wiegand decoder will only display one decoded value based on the assumption that it is one of the most widely used formats. Other formats may also be decoded but will NOT be displayed. Additional decoded information will however be stored as part of the information packet written to the SD card.]

```
Wg=00000132096e
Format = 26-bit
FC = 153
CN = 1207
```

Figure 2. Example Display for 26-bit card read.

If an SD card has been installed, the same decoded credential information will be appended to the "wieg.txt" file that is stored on the SD card. Additional decoded formats (if applicable) will also be stored during the same data store sequence.

SD Card Data Format

Data is written to the wieg.txt file in a standard ASCII text format (See example below) A series of asterisks is used to delineate the information generated from each credential read.

The SD card stored data will contain some additional decoded card information for wiegand codes that are associated with other supported card formats. In these cases the information received will be decoded for "each" format that is supported by the wiegand decoder firmware.

Whenever the unit is power cycled, a "Power Cycle" message is also appended to the "wieg.txt" data. The wiegand decoder unit does not support any Real-Time-Clock capability and therefor no time stamp information can be included with the stored data.

SD Card file contents – Example:

```
Wieg = 0x00000132096e
Format = 26-bit
Fac Code = 153 [H10301]
Card No. = 1207
****************************
Wieg = 0x3566802740c0
Format = 46-bit
Fac Code = 10957
Card No. = 1286240
****************************

---------Power Cycle---------

Wieg = 0x00046461529b
Format = 35-bit
Fac Code = 803 [Corp1000]
Card No. = 43341
****************************
Wieg = 0x000f085888c8          [Note that 3 different 36-bit formats are decoded]
Format = 36-bit
Fac Code = 100 [Napco]
Card No. = 8662084
Fac Code = 900 [Simplex]
Card No. = 2901092
Fac Code = 44 [Keyscan]
Card No. = 17508
****************************
```

[Important Note 1:]
Since the "wieg.txt" file does not contain any current date information the user must consider an alternative means to identify the data. If the user desires to identify a stored text file with a particular event or specific date it is recommended that Windows Explorer be used to rename the "wieg.txt" file to reflect the recently collected data contents. As an example the "wieg.txt" file might be renamed to "wieg_070416.txt" to identify credential data that was collected on July 4, 2016. Once the file has been renamed, the "wieg.txt" file will no longer exist and a new empty "wieg.txt" file will again be created during the next power up cycle of the wiegand decoder unit.

[Important Note 2:]
The micro SD card is a very small and fragile device. Care should be exercised when installing or removing the card.
The SD card can be removed or inserted while DC power is On or Off. However, in order for the card to be recognized by the microcontroller it must be installed and present prior to powering up the unit.

Recharging

The internal lithium battery can be recharged using the included battery charger circuit shown in Figure 3 below. The battery charger circuit incorporates a micro-USB connector that can be attached to most phone chargers, PCs, or other charger devices that supply a 5Vdc output on a micro-USB connector.
The iClass SE Wiegand unit must be turned off in order to charge the built-in battery.
Connect the Red(+) wire to the left charging input pin of the unit. Connect the Black(-) wire to the right charging pin of the unit. The polarity of the two pins is also marked on the printed circuit board with a small "+" and "-".
The charger circuit LED will glow "RED" while the battery is being charged.
When the battery is fully charged the "GREEN" LED on the charger circuit will be lit. The charger circuitry can then be removed.
The internal battery will provide about 2-2.5 hours of continuous use before needing to be recharged.
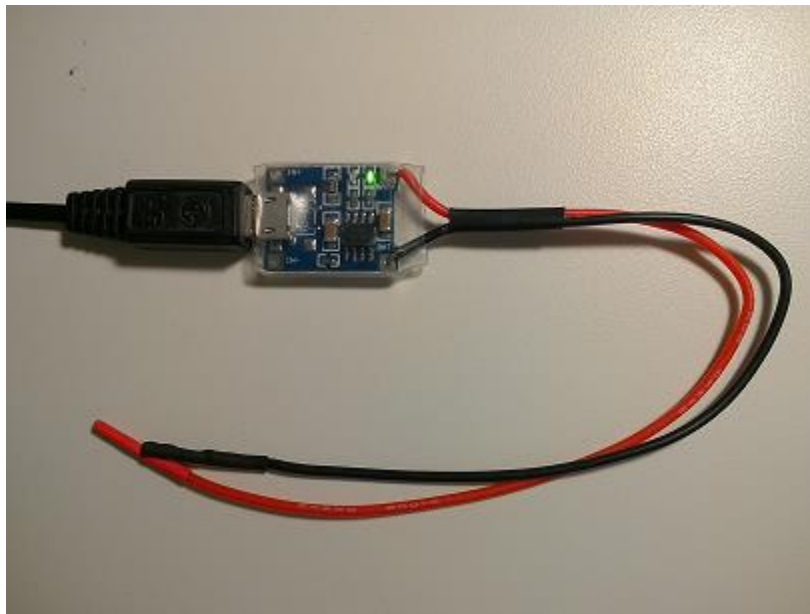To maximize battery life, the unit should be turned off when not being used.

Figure 3. Lithium Battery Charger Circuit