

Wiegand-to-RS232 Format Converter (WRFC)
Quick-Reference Installation Guide
Revision 1.2 – 04/30/21



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1 - Revision History

Rev.	Date	Description
1.2	04/30/21	<ul style="list-style-type: none">• Added section describing LED indicators
1.1	11/24/19	<ul style="list-style-type: none">• Updated photo images
1.0	11/16/16	<ul style="list-style-type: none">• Initial Release

2 - Introduction

The Wiegand-to-RS232 Format Converter (WRFC) provides format conversion for Wiegand devices including card readers. It may also be used with specialized devices such as Bluetooth serial dongles. The data is converted to ASCII characters and transmitted via RS-232. (If the destination device has only USB port(s), a USB-to-RS232 adapter will be required.)



The WRFC is a DCE (data communications equipment) device with DB9 female connector. (Please refer to the applicable note below for additional information.) It also features detachable USB cable and AC adapter. The WRFC is ideally suited for use in access control and other applications where it may be necessary to interface a Wiegand device to a serial host. It provides seamless format conversion, accepting a Wiegand stream of bits and outputting ASCII characters via RS-232.

Consider these features:

- Accepts standard Wiegand signals from a card reader or other device
- Outputs standard ASCII characters
- Configurable Wiegand formats for compatibility with source device (via Windows host software)
- RS-232 data output interface
- DB-9 (female) connector
- Provides ~6vdc power via RS-232 signals: DSR (pin 6) and CTS (pin 8)
- Housed in attractive plastic enclosure
- Optional relay and piezo beeper
- AC adapter (12vdc)

Notes:

- Some RS-232 applications require additional character(s) preceding and/or following the actual data. For example, consider an instance where you may wish to replace a magnetic stripe reader with a Wiegand device. Using the WRFC, this type of substitution is definitely possible. But the host system may be expecting delimiters and other characters which are specific to magnetic stripe cards. Without them, the host system may fail to properly decipher the data. Fortunately, WRFC software allows you to configure static header and trailer characters to surround the data, thereby mimicking the output of a magnetic stripe card reader.
- When connecting to another DCE device such as a magstripe card reader, a null-modem adapter is required. When connecting to a DTE (data terminal equipment) device such as a host computer, the adapter is not necessary.
- Wiegand input signals assume a high impedance state. Optional [pullup resistors](#) may be applied if desired.
- Destination devices or systems without a compatible RS-232 port will require a suitable adapter. For instance, a PC or laptop with only USB ports can utilize a USB-to-RS232 adapter.)
- A wireless interface is possible with the use of a serial Bluetooth dongle. This device has a RS-232 port which can be connected to the WRFC, permitting Wiegand conversion and wireless transmission of ASCII data to a Bluetooth-enabled host.

3 - Setup

Setup primarily involves the following operations:

- Connect the Wiegand source device
- Attach the RS-232 destination device
- Establish DIP switch option settings
- Plug in the AC adapter

If the destination device is a host computer (PC or laptop) with no RS-232 ports, a USB adapter cable will be necessary (available from Kadtronix). In this instance, perform the following additional setup steps:

- Install the Windows drivers (using the CD included with the adapter cable)
- Attach the DB9 end of the adapter cable to the WRFC controller
- Attach the USB end of the adapter cable to an available port on the host PC
- Verify that Windows identifies the adapter and loads the the drivers

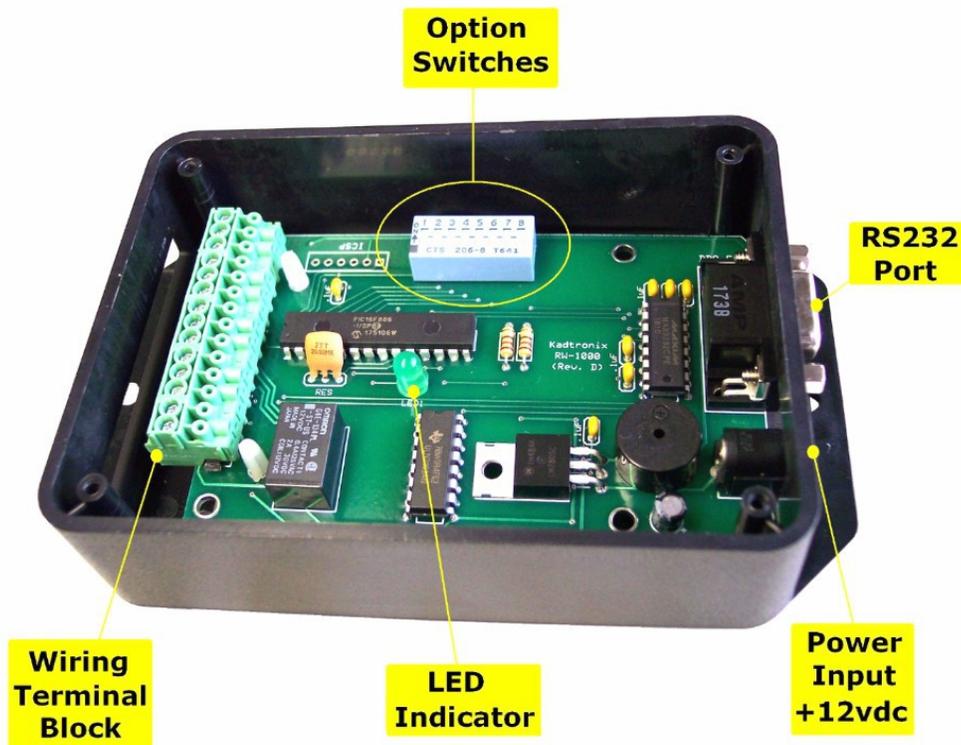
Additional setup & installation details are provided in subsequent sections of this manual.

4 - Hardware Installation

WARNING: Be sure that power is not applied until all wiring has been completed and verified.

Perform the following operations:

- Disconnect the AC power source
- Detach cover by removing the retaining screws.
- Assign desired options. (Refer to "Option Settings".)
- Locate the 14-position wiring terminal connector. (Refer to "TB-1 Wiring Connections".)
- Attach wires associated with the Wiegand source device
- Connect the RS-232 destination device at the DB9 connector. (The WRFC is a Data Communications Equipment [DCE] device. If the source device is also a DCE device such as a modem or LCD display, a null-modem adapter will be needed.)
- Re-attach the cover and secure with retaining screws
- Connect the barrel plug of the AC power adapter into the mating receptacle of the WRFC.
- Plug the AC adapter unit into a suitable wall outlet.



5 - LED Indicators

Two LED indicators are provided as described in the table below. (The cover must be detached and removed for viewer accessibility.)

LED Indicators:

Color	Purpose	Description
Green	Status Indicator	The status LED flashes at a steady one-second rate, indicating the firmware is operational and the unit is functioning properly. (The smooth, periodic blink rate may be momentarily disrupted when RS-232 data is received at the DB9 serial port. This is normal behavior.)
Red	Wiegand Activity	This indicator briefly illuminates when a Wiegand data transmission is detected on the D0 & D1 signal lines. Once the complete stream of bits have been captured, they are translated to ASCII format for subsequent RS-232 transmission via the DB9 serial port. (See note)

Notes:

- Indicators are not viewer-accessible without removing the cover.
- The Wiegand activity indicator was added as a feature revision and is native to units manufactured after July 2018. (Earlier versions include only the green status LED.)

6 - Option Settings

The WRFC controller has an 8-position set of on-board DIP switches for configuring miscellaneous options. To access the switches, remove the retaining screws from the enclosure and then carefully detach the lid. (Be sure to power off the device prior to opening the enclosure.) The photo above depicts interior elements of the WRFC device including option switches:

Note:

- The WRFC controller must be powered off prior to making any DIP switch changes.

6.1 - Options

The DIP switches permit configuration of the following options:

- Input format (Wiegand parameters)
- Output baud rate (RS-232)
- Wiegand pullup resistors

6.1.1 - Input Format (switches 1, 2)

This setting defines the anticipated Wiegand format from the source device. You may select a pre-stored format type or define a custom format. Configure the switches as follows for the desired type:

Conversion	DSW1 Switches
26-bit Wiegand	1 = off, 2 = off (default)
8-bit burst	1 = off, 2 = on
Custom format	1 = on, 2 = off (see note below)
Reserved	1 = on, 2 = on

Note:

- Custom formatting is possible via RS-232 commands. For custom formatting details, refer to "ASCII Commands".
- The WRFC controller must be powered off prior to making any DIP switch changes.

6.1.2 - RS232 baud rate (switch 3)

This setting establishes the data rate for communicating with the destination device or host computer (for performing optional host commands). Configure the switches as follows for the desired baud rate:

Baud Rate	DSW1 Switch
9600	3 = off (default)
19200	3 = on

Notes:

- Additional RS-232 settings: 8 data bits, no parity, 1 stop bit.
- The WRFC must be powered down & restarted before a new baud rate assignment can take effect.

6.1.3 - Wiegand pullup voltage (switch 4)

Wiegand-based systems typically provide a pullup voltage on data signal lines D0 & D1. If there is no available pullup voltage, the WRFC can be configured to provide it as follows:

Pullups	DSW1 Switch
Disabled	4 = off (default)
Enabled	4 = on

Note:

- By default, data signals D0 & D1 should assume a high impedance state when there is no active transmission by a source device.
- The high impedance state is especially crucial when there are multiple device(s) concurrently connected on the D0 & D1 data lines. These may include card readers, access controllers, or other compatible Wiegand items. It is imperative for any attached device to release the data lines (i.e., invoke the high impedance state) after generating a Wiegand transaction so that other devices may enact subsequent transactions.
- The WRFC utilizes 10k resistors to provide a pullup voltage of 4 to 5vdc. If the option is enabled, a pullup voltage is applied when the data lines are inactive (i.e., high impedance).
- Do not attempt to enable pullup voltage if another external Wiegand device already provides this function.

6.1.4 - Port power (switch 8)

The WRFC offers the capability to provide power through the DB-9 connector. This option is useful when the external RS-232 device is port-powered. The output voltage level will be roughly half the input supply voltage. For a 12VDC input, the output port power will be approximately 6VDC.

DB9 Power	DSW1 Switch
Disabled	8 = off (default)
Enabled	8 = on

When port power is enabled, a voltage is applied at DB9 signal outputs DSR (pin 6) and CTS (pin 8). Since the WRFC is a Data Communications Equipment (DCE) device, a null-modem adapter is required when connecting to another DCE device such as a LCD display or modem. With the adapter applied, the WRFC behaves like a DTE device and will apply port power at signals DTR (pin 4) and RTS (pin 7) as indicated in the table below:

WRFC output power	
Without null-modem	With null-modem
DSR (pin 6)	DTR (pin 4)
CTS (pin 8)	RTS (pin 7)

Note:

- Unless the RS-232 device is port-powered, this option should remain off (disabled).

7 - TB-1 Wiring Connections

The WRFC controller provides a 14-position terminal block with the following screw terminal connections.

Terminal	Description
1	Ground
2	+12VDC in/out (25vdc max)
3	+5V out (200 mA max.)
4	N/A
5	Wiegand D0
6	Wiegand D1
7	Ground
8	Relay contact (N/C)
9	Relay contact (COM)
10	Relay contact (N/O)
11	RS-232 Tx data (also available at DB-9)
12	RS-232 Rx data (also available at DB-9)
13	Ground
14	N/A

Note:

- Only a subset of the above connections will be required in a given application.
- If supplying your own power source at terminals 1 & 2, do not also concurrently provide power with the ac adapter at the barrel connector.
- The maximum allowable input power is +25VDC.

8 - Source Data

The WRFC controller receives a Wiegand stream of bits at the wiring terminals, DATA0 & DATA1. It is then converted and formatted as ASCII digits which are output to the RS-232 port (via DB9 connector). As an example, consider the following 26-bit Wiegand data received from the source device:

P	Site Code								User Code / ID Number																P			
1	0	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1

Applying 26-bit conversion, the data will be interpreted as shown below:

Site Code	User Code / ID Number
100 (64h)	00065520 (FFF0h)

As a second example, presume 8-bit burst conversion and the following Wiegand source data:

Burst Data							
0	0	1	1	0	0	1	0

Applying 8-bit conversion, the data will be interpreted as shown below:

Data Value
50 (32h)

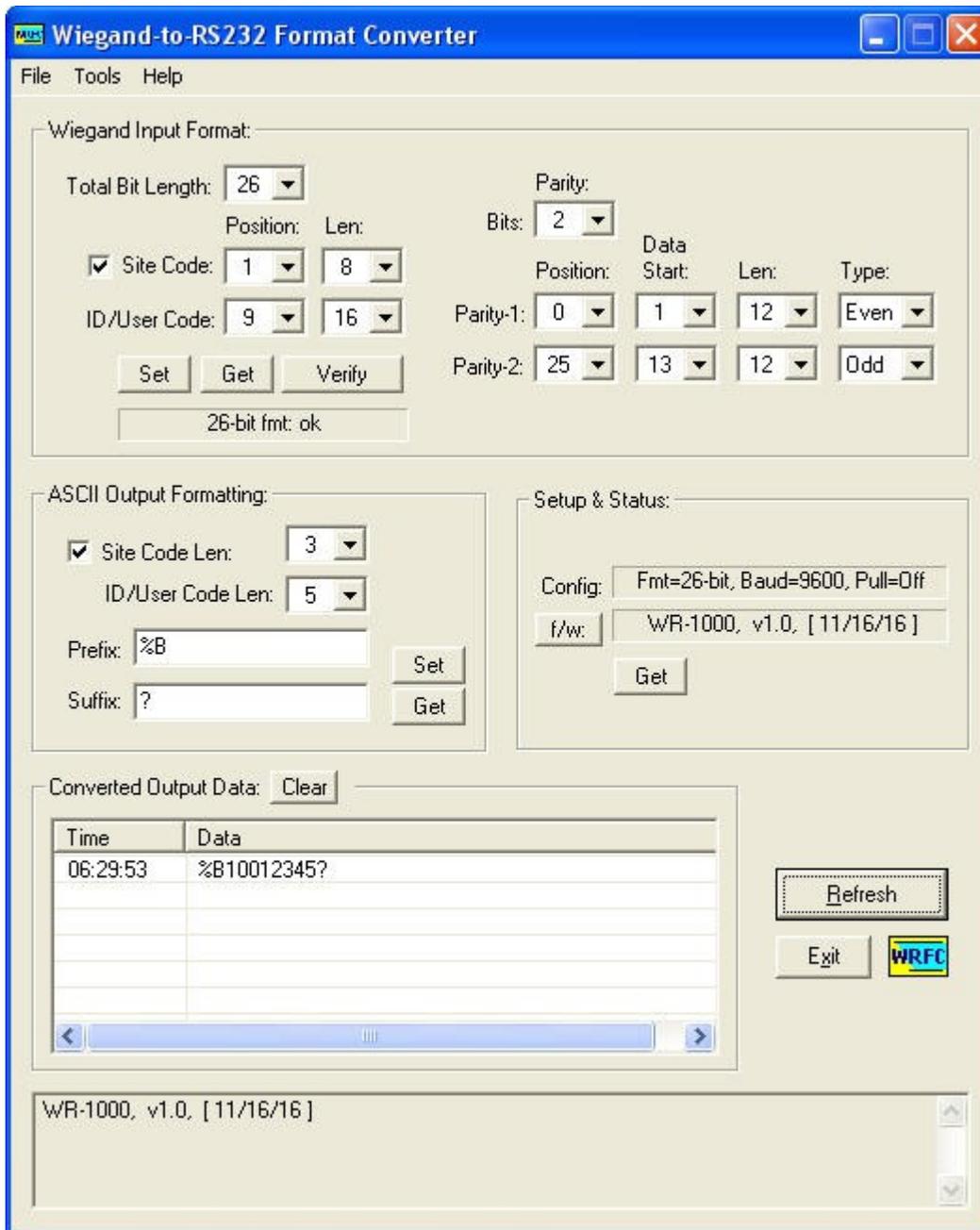
Notes:

- When the composite bit stream is received from a Wiegand source binary integer values are extracted. For standard 26-bit Wiegand format, two binary values are obtained: 8-bit site code (max value = 255) and 16-bit ID code (max value = 65535). For 8-bit burst mode, an 8-bit value is obtained (max value = 255).
- Typically, burst formats contain no site code or parity bits.
- ASCII output strings are terminated with a carriage-return character (13 dec. or 0D hexadecimal).

9 - Windows Host Software

Available WRFC host software for Windows provides functionality for configuring source formatting. It also provides the capability to receive and display converted ASCII output data strings from the device. The following is a summary list of software features

- Establish Wiegand source format parameters
- Configure desired custom format (up to 99 bits in length)
- Receive and display converted ASCII output data



These are the requirements for installing the host software on your PC or laptop computer:

- Pentium or compatible CPU
- 8 MB RAM
- 1 MB available hard disk space
- 1 available RS-232 or USB port
- Windows XP or higher

Note:

- Format selection (standard or custom) requires appropriate DIP switch configuration setting. (Refer to “Input Format” for details.)

10 - ASCII Commands

The WRFC controller receives optional ASCII host commands on the RS-232 port (via DB9 connector). Commands are subdivided into the following types:

- Peripheral activation
- Wiegand input formatting
- ASCII output formatting
- Miscellaneous commands

The RS-232 port (DB-9 connector) is used not only for issuing converted Wiegand data in the form of ASCII strings, but can also accept commands from a host PC or laptop. Host commands are prepended with a special three-byte header sequence. The command header is shown below, indicated in both ASCII text and hexadecimal representations:

Command Header	
ASCII Text	Numeric (Hex)
<code>\SOH \STX ></code>	01 02 3E

All ASCII transactions (converted Wiegand output strings and received host commands) must be appropriately followed by a termination character as shown below:

Terminator	
ASCII Text	Numeric (Hex)
<code>\CR</code>	0D

The example below illustrates a complete command sequence and is shown in both ASCII text and hexadecimal representations:

Command Example (Activate Relay)	
ASCII Text	Numeric (Hex)
<code>\SOH \STX > ! 0 5 \CR</code>	01 02 3E 21 30 35 0D

Notes:

- The command format contains no spaces. (Spaces are included in the example above only for clarity.)
- All command sequences must be preceded by the special 3-byte header. (Subsequent command listings have omitted the header for the sake of clarity.)
- Commands which assign a parameter setting also allow you to poll/retrieve the current setting. To do this, simply issue the command without parameters.
- All host commands must be terminated with a carriage-return character (13 dec. or 0D hexadecimal). (Subsequent command listings have omitted the terminator for clarity.)

10.1 - Peripheral activation

Peripheral activation commands are used for activating optional onboard peripherals including relay and/or piezo beeper. Available commands are listed below:

- Activate Relay
- Activate Piezo Beeper

10.1.1 - Activate Relay

The onboard relay (if equipped) may be used to activate an external device or specialized equipment. It can be commanded in one of two available methods: 1) activated for a timed duration, or 2) activated on or off for an indefinite period. The command format is defined below:

Command	Syntax	Example	Comment
Activate Relay	!xxxxxx	!00005	Activate relay for 5 seconds
	RELAY=n	RELAY=1	Activate relay (on)

Note: Onboard relay has a switching capacity of: 0.4A@125vac / 2A@30vdc.

Field designators:

- xxxxxx = 5-digit relay activation period in seconds
- n = activation designator: 0=off, 1=on

10.1.2 - Activate Piezo Beeper

The onboard piezo beeper (if equipped) may be used for audible annunciation and can be commanded in one of two available methods: 1) cyclically annunciate on and off for a specified number of repetitions, or 2) annunciate once for a specified duration. The command formats are defined below:

Command	Syntax	Example	Comment
Activate Beeper	&nn	&15	Sound the beeper 1.5 seconds
	&xrrr	&x005	Cycle the beeper (on & off) 5 times

Field designators:

- nn = 2-digit value indicating the activation period in hundreds of milliseconds
- rrr = 3-digit value indicating the number of beeper repetitions to perform

10.2 - ASCII Output Formatting

The ASCII output consists of the converted Wiegand data plus optional character string elements as shown below:

- Site code
- Padding / filler digits
- Prefix string (user-defined)
- Suffix string (user-defined)

If the Wiegand source data includes a site code, the WRFC can be configured to exclude that field from the resulting ASCII output. (Otherwise, the site code will be prepended to the formatted ASCII output data.) The following command is provided for the purpose of excluding the site code:

- Exclude site code

User-defined prefixed (prepended) and/or suffixed (appended) static strings may be desired for the purpose of mimicking a particular format or protocol. For instance, magnetic stripe formats include sub-strings, sentinel characters [% ? ;] and field separators [^ =]:

```
%B87219^ACME;123456?
```

For the string above, we'll presume that the sub-string, "123456" represents the actual data and that everything else might be relevant to an external application for the purpose of correctly identifying the composite string. For this situation, we could define the following static prefix:

```
%B87219^ACME;
```

And the appropriate static suffix would be the trailing character, denoted, "?". Available commands are listed below:

- Set output prefix
- Set output suffix

The WRFC can be configured to guarantee a consistent output length of the converted, formatted data using pad (filler) digits. Filler digits may be prepended to the site code (if specified) and/or the user code/ID to meet predetermined output field length requirements (see commands below). Padding is may be especially useful in facilitating reliable data processing by an external host. Available commands are listed below:

- Set site code output length
- Set user code/ID output length

Please note that each command must be terminated with a carriage-return character (13 dec. or 0D hexadecimal).

10.2.1 - Enable Site Code

This command is used to enable (include) or disable (exclude) the site code in the converted ASCII output. If enabled (and a site code is defined in the format), the site code will be prepended to the converted user ID/code.

Command	Syntax	Example	Comment
Enable/Disable Site Code	ENSCn	ENSC1	Enable site code

Field designator:

- n = operation identifier (1=enable; 0=disabe)

Notes:

- By default, site codes are disabled and therefore excluded from the converted ASCII output.

10.2.2 - Set Site-Code Length

This command sets a desired string length for outputting the converted & ASCII-formatted site-code (if specified). If the formatted site-code output string length is less than the designated length value, pad (filler) zeros will be prepended to the field.

Command	Syntax	Example	Comment
Set Site Code Length	SSCLnn	SSCL05	Establish 5-digit site code string

Field designator:

- nn = site-code length (digits)

As an example, consider the following converted, formatted 8-character ASCII output string consisting of 3-digit site-code (“100”) and 5-digits of data (“12345”):

10012345

Presuming a desired site-code length of 5 digits and data length of 10 digits, the output string is transformed as follows:

001000000012345

Notes:

- If the formatted output length is greater than or equal to the commanded length value, there will be no change to the output string (i.e., no filler digits will be applied).
- If a site code is specified in the Wiegand format, the ASCII-converted string will be prepended to the user code/ID data as shown in the example above.
- The maximum allowed site-code length is 10 digits.
- The default site-code length is 3 digits.

10.2.3 - Set User-Code/ID Length

This command sets a desired string length for outputting the converted & ASCII-formatted user-code/ID. If the formatted user-code/ID output string length is less than the commanded length value, pad (filler) zeros will be prepended to the field.

Command	Syntax	Example	Comment
Set User Code/ID Length	SDCLnn	SDCL10	Establish 10-digit user code/ID string

- nn = data length (digits)

As an example, consider the following converted, formatted 5-character ASCII user-code/ID output string:

12345

Presuming a desired user-code/ID length of 10 digits, the output string is transformed as follows:

0000012345

Notes:

- If the formatted output length is greater than or equal to the commanded length value, there will be no change to the output string (i.e., no filler digits will be applied).
- The maximum allowed user-code/ID length is 10 digits.
- The default user-code/ID length is 5 digits.

10.2.4 - Set Output Prefix

This command establishes an optional ASCII string that will be prepended to the converted ASCII composite output (site code + user code/ID). The command format is defined below:

Command	Syntax	Example	Comment
Set Output Prefix	STP x . . . x	STP%B87219^ACME;	Apply the specified static prefix string

Field designators:

- x...x = desired string that will be prepended to the formatted output data

Notes:

- The maximum data prefix length is 20 characters
- The default prefix string is empty, meaning that no prefix will be applied.
- To clear/revoke the data prefix, simply issue the command with the parameter sub-string, “<!>” as shown below:

```
STP<!>
```

10.2.5 - Set Output Suffix

This command establishes an optional ASCII string that will be appended to the converted ASCII composite output (site code + user code/ID). The command format is defined below:

Command	Syntax	Example	Comment
Set Output Suffix	STS x . . . x	STS?	Set “?” as the suffix character

Field designators:

- x...x = desired string that will be prepended to the formatted output data

Notes:

- The maximum data suffix length is 20 characters
- The default suffix string is empty, meaning that no suffix will be applied.
- To clear/revoke the data suffix, simply issue the command with the parameter sub-string, “<!>” as shown below:

```
STS<!>
```

10.3 - Wiegand Input Formatting

Input data formatting instructs the WRFC how to properly identify and process the incoming Wiegand bit stream. The controller must be configured so that the predefined format is compatible with the data bits received from the source device. There are two available Wiegand input format types:

- Standard
- Custom

Standard formats are preexisting, non-customizable definitions and include 26-bit and 8-bit types. Custom formats are user-created, allowing you to define practically any desired input. (Refer to “DIP Switch Settings” to select the desired format.) Wiegand formatting commands are provided for the following purposes:

- Retrieving active format parameter settings
- Creating a custom-defined format

Commands are provided for retrieving active format parameter settings. The active format may be standard or custom-defined. These commands are described in subsequent sections of this manual.

If desired, you may create a custom-defined input format. (To utilize a custom format, the appropriate configuration option must be enabled. Refer to “DIP Switch Settings” for details.) Multiple commands are required to define the entire set of parameters which comprise a format. The following parameters must be specified:

- Total bit length
- Parity mask (bit-location, data-start index, count, even/odd)
- Data length (start index, length)
- Site code (start index, length)

Available Wiegand formatting commands are listed below:

- Format clear
- Set Format Identifier
- Set Parity Mask
- Set Data Field
- Set Site Code Field
- Verify Format
- Assign Default Site Code

Command details including descriptions and syntax are provided in subsequent sections.

For those desiring to create custom formats, it is essential to understand individual field parameters and their relative bit positions. To illustrate this, a sample 26-bit Wiegand string is shown below. (Note that the designated bits will be output to the receiving device in order from left to right, beginning with bit 0.)

P	Site Code								User Code / ID Number																P
1	100 (64h)								65520 (FFF0h)																1
1	0	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

Notes:

- Bit fields are numbered in order from left to right, beginning with 0, the most-significant bit of the composite output.
- "P" indicates a parity . (The left-most indicator denotes even parity, while the right-most indicator denotes odd parity.)
- Parity and site code are considered optional fields for custom formats.
- Up to two parity indicators may be specified in custom formats.
- Custom formatting must be enabled using the appropriate option switch. (Refer to "DIP Switch Settings" for details.)
- Commands which assign a parameter setting also allow you to poll/retrieve the current setting. In most cases, retrievals are context sensitive. That is, they are applicable to the currently selected format, whether custom or standard. (Refer to "DIP Switch Settings" for details.)
- All commands must be terminated with a carriage-return character (13 dec. or 0D hexadecimal).

10.3.1 - Format Clear

This command clears all custom formatting parameters including length, parity, data specifications and site code information. The command format is defined below:

Command	Syntax	Example	Comment
Format Clear	WGCL	WGCL	Clear all custom formatting parameters.

Field designators:

- none

Note:

- This command may be used to clear preexisting custom format parameters prior to defining a new custom format.
- The command does not apply to standard formats.

10.3.2 - Set Format Identifier

The format identifier establishes the high-level format parameters including overall length and number of parity indicators. The format length defines the total number of bits which comprise the format. The parity count defines the number of single-digit parity indicators contained in the format. The command format is defined below:

Command	Syntax	Example	Comment
Set Format	WGFLnnp	WGFL262	Set 26-bit format length; include 2 parity bits

Field designators:

- nn = format length (bits)
- p = number of parity indicators

Note:

- The maximum format length is 99 bits
- Up to 2 parity indicators may be defined

10.3.3 - Set Parity Mask

Parity provides an indication of data validity. This command establishes a mask, defining specific bits in the format that are used in the parity check. You may specify up to two parity masks (see "Set Format Identifier") and each may be designed as even or odd. The following elements comprise the mask:

- location - defines the bit index where the single-digit parity field resides
- data-start - defines the first bit that will be used in the parity check
- count - defines the number of bits to be used in the parity check
- type - defines the type of parity check to perform: even or odd

The command format is defined below:

Command	Syntax	Example	Comment
Set Parity Mask	WGPnllsscct	WGP1000112E	Set parity-1 at bit 0; compute on bits 1-12, even
		WGP2251312O	Set parity-2 at bit 25; compute on bits 13-24, odd

Field designators:

- n = designator (1 or 2)
- ll = bit index defining where the single-digit parity field resides
- ss = starting data bit that will be used in the parity check
- cc = number of data bits to be used in the parity check
- t = type of parity check to perform: 'E' = even, 'O' = odd

As an illustration of parity masking, consider the 26-bit Wiegand data sample shown in the table below. The format requires that the total number of '1' bits located in the first 13 bit fields (identified in green) must be even. Therefore the even parity indicator (located in the left-most bit field) is assigned a '1' (to yield an even result). Likewise, the total number of '1' bits in the last 13 bit fields (identified in red) must be odd. Therefore, the odd parity indicator (located in the right-most bit field) is also assigned a '1' (to yield an odd result).

P	Site Code								User Code / ID Number																P
	00100 (64h)								00065520 (FFF0h)																
1	0	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

Notes:

- Unless specified otherwise, index values are zero-based.
- Bit fields are numbered in order from left to right, beginning with 0, the most-significant bit of the composite output.
- Parity is an optional field element. If undesired, simply omit the command.
- For even parity, the total number of "1" bits in relevant bit locations (including the parity bit) must be even. Therefore, the parity bit must be assigned to "0" if the total number of "1s" is even. Otherwise, if odd, a "1" is assigned to force the count to be even. For odd parity, the total number of "1" bits in relevant bit locations (including the parity bit) must be odd. Therefore, the parity bit must be assigned to "0" if the total number of "1s" is odd. Otherwise, if even, a "1" is assigned to force the count to be odd.
- A maximum of two parity fields may be defined.

10.3.4 - Set User Code Field

This command establishes the location and length of the user code (ID number) field. (For applicable format definitions, this field designates the user code / ID number.) The command format is defined below:

Command	Syntax	Example	Comment
Set User Code	WGUssll	WGU0916	Set 16-bit user code length, starting at bit 9

Field designators:

- ss = start data index
- ll = length of data field (32 bits max)

Notes:

- The maximum allowable length of the field is 32 bits.
- Unless specified otherwise, index values are zero-based.

10.3.5 - Set Site Code Field

This command establishes the location and length of an optional site code field. The command format is defined below:

Command	Syntax	Example	Comment
Set Site Code	WGSssl	WGS0108	Set 8-bit site code, starting at bit 1

Field designators:

- ss = site code start index
- ll = length of site code field (32 bits max)

Notes:

- The maximum allowable length is 32 bits.
- Unless specified otherwise, index values are zero-based.
- The site code is an optional field element. If undesired, simply omit the command.

10.3.6 - Verify Format

This command evaluates the current format configuration to determine its validity. If the format is invalid, an error message will be reported to the host. The command format is defined below:

Command	Syntax	Example	Comment
Verify format	WGVF	WGVF	Evaluate the current format.

Field designators:

- none

Notes:

- Though the command is intended primarily for use with custom-defined formats, it may also be applied to standard formats.

10.4 - Miscellaneous Commands

The WRFC can also accept miscellaneous commands. Currently, there is one such command in this category:

- Retrieve Configuration Settings

Command details including descriptions and syntax are provided in subsequent sections. (Please note that each command must be terminated with a carriage-return character (13 dec. or 0D hexadecimal).

10.4.1 - Report Configuration Settings

This command retrieves DSW1 DIP switch configuration settings. (Refer to “DIP Switch Settings” for details.) The command format is defined below:

Command	Syntax	Example	Comment
Report Config. Settings	WRCS	WRCS	Retrieve DSW1 configuration settings

11 - Care and Maintenance

The product requires no special care or maintenance other than protection from potential damage due to mechanical shock, electrical surges, and vandalism. It is also vital to shield the hardware from exposure to the elements, hazardous environments, and otherwise extreme conditions.

12 - Warranty

This product is warranted for a period of 1 year from the date of purchase and is guaranteed to be free from defects. The warranty covers the entire unit, except if any part or component has been modified or otherwise converted from its original form. The warranty does not cover damage or failure due to neglect, improper use, or unshielded exposure to moisture, power surges, hazardous environments and the like.

IMPORTANT: The customer is responsible to provide protection against potential over-voltage situations including power surges, spikes, and lightning strikes. The use of adequate surge protection is recommended.

13 - Contact Information

Should you have any questions or comments please contact us :

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