WGTooL Wiegand Converter Operation Menu

WGTooL converter is designed for embedding products manufactured by third-parties into auto control system, hardware includes 1 wiegand input port, 1 USB output port and 1 ABA output and 1 RS232 port. It supports 1 bit to 128 bits wiegand data stream. WGTooL automatically indentify the Wiegand data format.

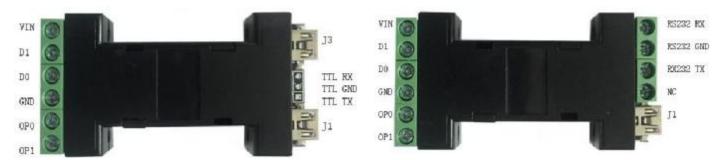WGTooL can be set as 1 of 4 functions type:

1. Wiegand to RS232 conveter
2. Wiegand to USB (PS2) converter
3. Wiegand to ABA track2 converter
4. RS232 to wiegand converter

The weigand data can be output as HEX, Decimal or Raw wiegand data format

WGTooL is with built in buzzer for operation indication, the buzzer can be enable or disabled

WGTooL supports QWERTY or AZERTY keyboard layout when it works as wiegand to PS2 converter.

There are 2 versions of WGTooL hardware:

WGTooL-A is with USB to RS232 chip, works based on virtual serial port, suitable for machines without serial port;

WGTooL-B is normal RS232 interface, suitable for machines with serial port.

1. Product picture and wiring description

WGTooL-A (virtual RS232)   WGTooL-B (normal RS232)

Refer to Appendix B   WGTooL wiring under different function type for detail

2. Configuration of WGTooL (Use USB Port J1)

WGTooL default setting is: Wiegand to PS2, Decimal Output, Buzzer Enable and support QWERTY layout.

You may change the setting by following steps: (Ues USB Port J1 on WGTooL)

1.1 Run an editable software on PC, For example: notepad or Microsoft Word

1.2 connect USB cable to PC

1.3 Plug IN WGTooL to PC à Plug OFF WGTooL à Plug IN à Plug OFF à Plug IN à Plug OFF à Plug IN WGTooL (each Plug IN /OFF should be done within 2 seconds, and total 3 times, then Plug IN and Keep it work), WGTooL will sound one "Bi" and goes into auto setting procedure

1.4 new format is appeared on window automatically at each second, when the demand Function(1-4) is appeared , plug off the reader, setting is stored and WGTooL will work with new Function when next power on.

1.5 Repeat 1.3 and 1.4 for setting Output format(5-7) / Keyboard layout(E=QWERTY, F=AZERTY) or Enable/Disable buzzer

Remark:

    1. Plug IN and Plug OFF WGTooL in 3 times, then Plug In WGTOOL will make it into auto setting work mode Normal Plug In WGTooL into system, it will in normal working mode.

    2. If WGTooL can not go to auto setting mode, pls. power on it and let it in normal work mode first, then try again.

    3. J1 USB PORT is used at this stage.

3. Output Format description:

3.1 HEX: valid when wiegand format is 26/34 or 24/32 ; it is 3BYTE (Wiegand26/24) or 4 byte(Wiegand32/34) HEX data

3.2 Decimal: valid when wiegand format is 26/34 or 24/32; it is 8 digitals (wiegand26/24) or 10 digitals (wiegnad32/34) decimal data

3.3 Raw data: valid for all formats, it is 17 bytes HEX data, the first byte is the wiegand data length, and other 16 bytes are wiegand data. Format is :   Length D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15

For example: 23 00 00 00 00 00 00 00 00 00 00 07 22 DE 3F 89

Means, it is 35 bit (Hex23=Dec35)wiegand, and you can take 35 bits data started from last bit, it is

0	7	2	2	D	E	3	F	8	9

0000 0111 0010 0010 1101 1110 0011 1111 1000 1001   take 35 bits are

   111 0010 0010 1101 1110 0011 1111 1000 1001   this is the 35 bit raw wiegand data

4. Function description

4.1 Wiegand to PS2: accept data(max. 128 bits) from a wiegand device and send data to a host via USB port.

WGTooL works as external input device like keyboard. Output data is show on the focused window. (Note, Excel or Word etc.).   3 output formats can be set : Hex /Dec/ Raw weigand data

When Wiegand data is 24/26/32/34 bit, WGTooL will send decoded data in HEX or Dec (according to the output format setting), and for other wiegnad, will send Raw data

4.2 Wiegand to RS232: accept data from a wiegand device and send data to a host via virtual RS232 port or normal RS232 Interface (max. 128 bits).   The serial port setting is 9600 Baud, 8 data bits, no parity, 1 stop bit.

 3 output formats can be set as: Hex /Dec/ Raw weigand data

When Wiegand data is 24/26/32/34 bit, WGTooL will send decoded data in HEX or Dec, format is:

HEX: 3 byte(wiegand26/24) HEX Data in ASCII or 4 Byte(wiegand34/32) HEX data in ASCII

Dec: 8 digitals (Wiegand26/24) decimal data in ASCII or 10 digital(wiegand34/32) decimal data in ASCII

Raw data: 0x2 Length D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 0x3 0xD

0x2 is the start flag, 0x3 0xD is end flag, raw data is same as PS2 function.

4.3 Wiegand to ABA : accept data from a wiegand device and send data as ABA track II format.

Under this function, no matter output format setting, the data will be calculated in 10 digitals decimal data according the ABA protocol, so wiegand 24/26/32/34 are valid under this function.

4.4 RS232 to Wiegand: accept data from RS232 format and send it as wiegand, max. 128 bits wiegand is supported

Under this function, output format is ignored. Host send data stream according to below format, and WGTooL will send wiegand out. The serial port setting is 9600 Baud, 8 data bits, no parity, 1 stop bit.

RS232 data stream format: Leng1   Leng2   D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 CRC

Leng1: =12 , HEX, means total 18 bytes data will be sent

Leng2: Hex, the wiegand bit length, WGTooL will send total Leng2 bits, started from D0

D0-D15: total 16Byte (128Bits) data of wiegand

CRC: CRC from Leng2 to D15, one byte

Example data1:   12 80 11 22 33 44 55 66 77 88 99 00 aa bb cc dd ee ff 78

128bit wiegand, data are 11 22 33 44 55 66 77 88 99 00 aa bb cc dd ee ff   (HEX)

CRC=80+11+22+33+44+55+66+77+88+99+00+aa+bb+cc+dd+ee+ff=78   (HEX)

 Example data2:   08 30 11 22 33 44 55 66 95

Total 8 byte data will be sent via RS232, the wiegand format is 48 bits, and data are 11 22 33 44 55 66, CRC is 95

For wiegand26 and 34 bit format, WGTooL will calculate parity bit automatically, RS232 just need to send data:

Wiegand26:   05 1a 11 22 33 80   , 05 menas 5 byte is sent, 1A is wiegand26 bit, data are 11 22 33

Wiegand34:   06 22 11 22 33 44 CC   , 06 menas 6 byte is sent, 22 is wiegand34 bit, data are 11 22 33 44

See Appendix A for more example data for above functions

Appendix A — WGTooL Function list with data stream example

function	received WG		RS232 output with different output format setting		
	wiegand format	wiegand data （HEX）	output format = HEX	Output format = DEC	output format = RAW
WG to RS232	WG26(or WG24)	11 22 33	11 22 33　　　(ASCII code)	0001122867　　(10 digital ASCII code)	02 1A 00 00 00 00 00 00 00 00 00 00 00 00 02 22 44 66　03 0D　　(HEX format)
	WG34 (or WG32)	11 22 33 44	11 22 33 44　　(ASCII code)	0287454020　　(10 digital ASCII code)	02 22 00 00 00 00 00 00 00 00 00 00 00 00 22 44 66 89 03 0D　　(HEX format)
	others	11 22 33 44 55 66 (48 bits)	02 32 00 00 00 00 00 00 00 00 00 00 11 22 33 44 55 66 03 0D (HEX format)	02 32 00 00 00 00 00 00 00 00 00 00 11 22 33 44 55 66 03 0D (HEX format)	02 32 00 00 00 00 00 00 00 00 00 00 11 22 33 44 55 66 03 0D (HEX format)
		11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF (128 bits)	02 80 11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF 03 0D (HEX format)	02 80 11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF 03 0D (HEX format)	02 80 11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF 03 0D (HEX format)

function	received WG		PS2 output with different output format setting		
	wiegand format	wiegand data (HEX）	output format = HEX	output format = DEC	output format = RAW
WG to PS2	WG26(or WG24)	11 22 33	11 22 33　　　(HEX, 3 BYTEs)	0001122867　　(10 digitals）	1A 00 00 00 00 00 00 00 00 00 00 00 00 02　22 44 66　(HEX , 17 BYTEs)
	WG34 (or WG32)	11 22 33 44	11 22 33 44　　(HEX, 4 BYTEs)	0287454020　　(10 digitals)	22 00 00 00 00 00 00 00 00 00 00 00 00 22 44 66 89　(HEX , 17 BYTEs)
	others	11 22 33 44 55 66 (48 bits)	30 00 00 00 00 00 00 00 00 00 00 11 22 33 44 55 66 (HEX, 17 BYTEs)	30 00 00 00 00 00 00 00 00 00 00 11 22 33 44 55 66 (HEX, 17 BYTEs)	30 00 00 00 00 00 00 00 00 00 00 11 22 33 44 55 66 (HEX, 17 BYTEs)
		11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF (128 bits)	80 11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF (HEX , 17 BYTEs)	80 11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF (HEX , 17 BYTEs)	80 11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF (HEX , 17 BYTEs)

function	received WG		PS2 output with different output format setting		
	wiegand format	wiegand data (HEX）	output format = HEX	output format = DEC	output fommat = RAW
WG to ABA2	WG26(or WG24)	11 22 33	N/A	0001122867　　(10 digitals)	N/A
	WG34 (or WG32)	11 22 33 44	N/A	0287454020　　(10 digitals)	N/A
	others	N/A	N/A	N/A	N/A

function	wiegand type	WG Data want to send	RS232 Data sample to send
RS232 to WG	WG26(or WG24)	11 22 33	05 1a 11 22 33 80
	WG34 (or WG32)	11 22 33 44	06 22 11 22 33 44 CC
	others	11 22 33 44 55 66　　　(48 bits)	08 30 11 22 33 44 55 66 95
		11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF　　(128 bits)	12 80 11 22 33 44 55 66 77 88 99 00 aa bb cc dd ee ff 78

Appendix B wiring under different function type

Group	Mark	Function	wiring under different function type			
			WG2RS232	WG2PS2	WG2ABA	RS232 to WG
Input	VIN	7-15V DC Power Positive			y	Y
	D1	Wiegand input Data 1	Y	Y	Y	
	D0	Wiegand input Data 0	Y	Y	Y	
	GND	Power ground	Y	Y	Y	Y
Output	OP0	wiegand output D0 or Clock for ABA			Y	y
	OP1	wiegand output D1 or Data for ABA			Y	y
Normal RS232	Tx	RS232 output to host	Y			Y
	GND	Ground to host	Y			Y
	Rx	RS232 input to converter				Y
virtual RS232	J3	USB interface, virtual serial port	Y			Y
PS2 output	J1	USB interface / config port		Y		

Remark: Y means to be wired under this function, refer to below detail list:

1. WG2RS232, Normal RS232 : VIN,GND from external DC power(7-15V); D0,D1,GND from reader; TX,GND to Host

2. WG2RS232, virtual   RS232   :   D0,D1,GND from reader, J3 to host USB port

3. WG2PS2 :   D0,D1,GND from reader , J1 to host usb port

4. WG2ABA: VIN GND from external DC power, D0,D1,GND from reader as input , OP0=Clock ; OP1=Data of ABA

5. RS232 to wiegand, Normal RS232 : VIN GND from external DC power, ,TX/RX/GND to Host, OP0=D0, OP1=D1

6. RS232 to wiegand, virtual   RS232:   J1 to host USB port;   OP0=D0, OP1=D1 of wigand output

download virtual RS232 port driver:

for windows   www.wch.cn/download/CH341SER_EXE.html
for android   www.wch.cn/download/CH341SER_ANDROID_ZIP.html
for Linux   www.wch.cn/download/CH341SER_LINUX_ZIP.html
for MAC/iOS   www.wch.cn/download/CH341SER_MAC_ZIP.html

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