WTSC 485

Wiegand to RS-485 Serial Converter

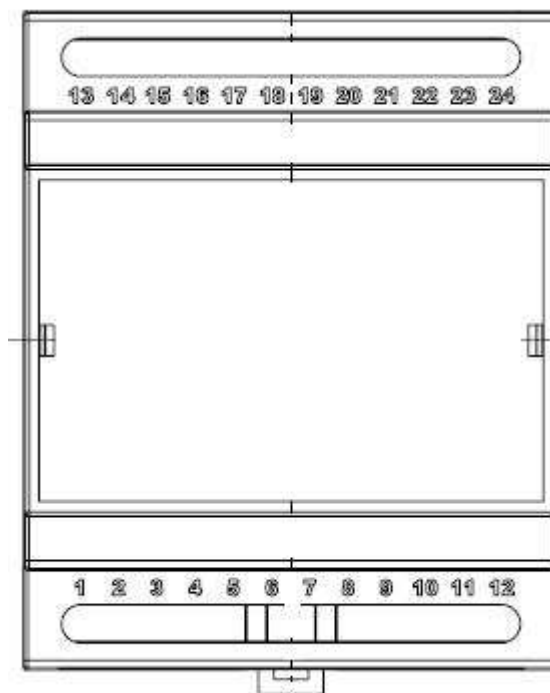**Technical manual**

Version 1.05

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Introduction

The "Wiegand To Serial Converter" (WTSC) was developed to interface access control equipment. For example to connect keyboards and card readers with *Wiegand* interfaces to access controller with a RS-485 serial port.

Our "Wiegand To Serial Converter" is equipped with 2 Wiegand interfaces to connect 2 access control devices like card readers. The main reason is that often card readers are mounted on both sides of a door. Both readers share the 3 digital outputs which control the LED's and the buzzer.

The WTSC has a RS-485 serial interface (optional RS-232). Through this interface the WTSC is connected to an access controller (door controller). The access controller reads/polls the information from the WTSC and controls the digital outputs and the relay. The relay is normally used to control the door opener.

The protocol is MODBUS (Other protocols on request).

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External connections

Power supply

The WTSC unit must be supplied with a voltage between 10 and 30 Volt DC.

The supply is connected to the +DC and GND terminal on the unit (These are found in the upper row of screw terminals on the left side)

Terminal	Number	Description
GND	13	Negative (-) connection from DC power supply
+DC	14	Positive (+) connection from DC power supply

Dual Wiegand interface

The W2SC unit has two Wiegand Interfaces. Both interfaces offer a 10V supply voltage for the readers.

Wiegand interface 1

Terminal	Number	Description
+DC	1	Positive (+) 10V
D0	2	Wiegand D0
D1	3	Wiegand D1
GND	4	Negative (-) / GND

Wiegand interface 2

Terminal	Number	Description
+DC	5	Positive (+) 10V
D0	6	Wiegand D0
D1	7	Wiegand D1
GND	8	Negative (-) / GND

Digital outputs

The WTSC unit has 3 open collector outputs to control LED's and buzzer of the card reader. The digital outputs are fully controlled by the access controller.

Terminal	Number	Description
LED1	9	Output 1 - normally red LED
LED2	10	Output 2 - normally green LED
BUZZ	11	Output 3 - normally Buzzer
GND	12	Ground

Remark: Not every card reader supports the external control of the LED's and the buzzer.

Relay – Door opener

The WTSC unit has a relay (30 V DC, 3 A) to control the door opener.

Terminal	Number	Description
R1-A	23	Relay A
R1-B	24	Relay B

Serial interface

The WTSC unit has a RS-485 serial port (optional RS-232).

Terminal	Number	Description
SND	19	Signal Ground
B / (RXD)	20	RS485- (B) inverting signal for standard RS485 port
A / (TXD)	21	RS485+ (A) non-inverting signal for standard RS485 port

Communication

The WTSC uses the MODBUS protocol. The MODBUS register structure:

Input Register (read only)

Device Address	ModBus Address	Description	
11001	1000	Data length of Wiegand interface 1	not zero, if data valid
11002	1001	Low word of Wiegand interface 1 data	contains the lowest data bytes
11003	1002	Mid word of Wiegand interface 1 data	contains the middle data bytes
11004	1003	High word of Wiegand interface 1 data	contains the high data bytes
11005	1004	Data length of Wiegand interface 2	not zero, if data valid
11006	1005	Low word of Wiegand interface 2 data	contains the lowest data bytes
11007	1006	Mid word of Wiegand interface 2 data	contains the middle data bytes
11008	1007	High word of Wiegand interface 2 data	contains the high data bytes

Holding Register (read / write)

Device Address	ModBus Address	Description	
42001	2000	Modbus address / Slave ID	Default = 42 Hardware jumper will be added to the base value: Jumper 1 = 1, Jumper 2 = 2, Jumper 3 = 4 (So Modbus address is 47 with jumper 1 and 3 set)
42002	2001	Modbus mode	1 = ASCII 2 = RTU (default)
42003	2002	Parity	1 = None 2 = Odd 3 = Even (default)
42004	2003	Baud rate	Default = 9600 Baud
42005	2004	Wiegand data time	Timespan the read Wiegand data is present in the input registers. 5ms Steps, default = 1000 (5sec)
42006	2005	Command register	0x42 = write configuration to EEPROM 0x24 = reset the device
42007	2006	Device ID	21079
42008	2007	Application version	Version of the software. Actually 4.

Coil Register (read / write)

Device Address	ModBus Address	Description	
3001	3000	DO 2 - green LED	ON = 1; OFF = 0
3002	3001	DO 1 - red LED	ON = 1; OFF = 0
3003	3002	DO 3 - Buzzer	ON = 1; OFF = 0
3004	3003	Relay	ON = 1; OFF = 0

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Technical Data

Power supply	Min	Typ	Max		
Operating Voltage	10	-	30	VDC	Protected against wrong polarity.
Current	6	-	55	mA	
Wiegand Interface (2x)					
Serial Interface					RS-485
Digital Output (3x)					Only for LED
Relay	10	-	30	VDC	Max. 3A
Storage temperature:	-30	-	+65	°C	
Operating temperature	-25	-	+55	°C	
Humidity (non condensing)	5	-	90	%	
Weight	0.300			Kg	
External dimensions	W 52,5 x H 86 x D 58 mm				3 Module M36 DIN-rail enclosure
Ingress Protection (IP)	IP20				
Approvals	EN 61000-6-2 EN 61000-6-3				