

techfass

WREM 77 EISGRT

RFID reader 13,56 MHz, 125 kHz

Introduction

WREM 77 EISGRT reader with wiegand output, reads media at 125 kHz (EM Marin) & 13.56 MHz, (MIFARE®, NFC)) and is designed for connection to control modules and door controllers of the APS mini Plus or APS 400 system, or to third party controllers. The reader is equipped with a configurable WIEGAND data output usable with most third party systems. The reader is delivered in the installation box KU68-1901, contains two inputs (LED and buzzer control), as well as an RS 485 interface for configuring the Wiegand output. In addition to standard MIFARE® and MIFARE® DESFire® RFID cards or key fobs, the reader is compatible with NFC-enabled mobile phones with Android 4.4 Kit Kat (or higher) and the TECH FASS Mobile ID application, with which the mobile phone can be used for identification (replaces usual RFID card).



a. Application

- Access control system, booking system
- Door access control
- Lift control

b. Parameters

- Input voltage 8 ÷ 28 Vdc
- Typical current consumption 53 mA @ 12 V
- Maximum input power 1,1 W
- Reading ID media MIFARE®, NFC, EM Marin, Jablotron
- 1x RS 485 (update firmware, wiegand output format settings)
- 1x Wiegand output (length 24 – 56 bits, MSB / LSB, reverse option)
- 2x Input (LED, buzzer control)
- Assembly in the installation boxes KU 68, LK 80.

c. Variants

KATALOGUE NUMBER	PART NUMBER	SYSTEM	VARIANT	RFID frequency
514771A2	WREM 77 EISGRT-MF	APS mini Plus	KU 68-1901	13,56 MHz
51477323	WREM 77 EISGRT	APS mini Plus	KU 68-1901	125 kHz, 13,56 MHz
51477311	WREM 77 EISGRT-EM	APS mini Plus	KU 68-1901	125 kHz
53477412	WREM 77 FISGRT-MF	APS mini Plus	LK 80	13,56 MHz
514773F3	WREM 77 FISGRT	APS mini Plus	LK 80	125 kHz, 13,56 MHz
51477401	WREM 77 FISGRT-EM	APS mini Plus	LK 80	125 kHz

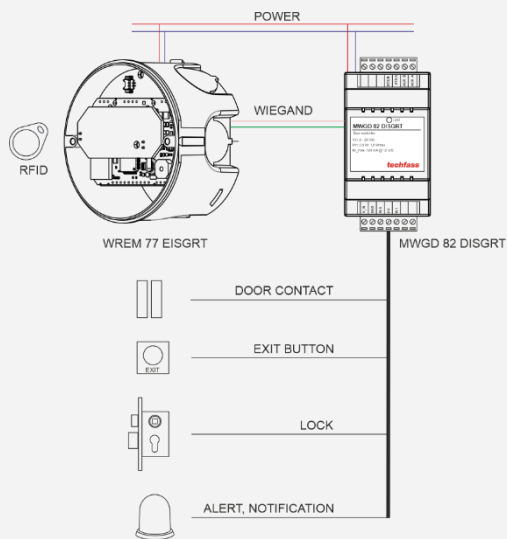
d. Marking

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
W	R	E	M		7	7			E	I	S	G	R	T	-	M	F							
System M: APS mini Plus N: APS 400 W: Wiegand output				Product type REM: Reader module			HW type		Mechanics E: KU68-1901 F: LK 80		Environment I: Indoor t range T: -10 ÷ +55°C		Design Standard Colour GR: Gray		Connection T: Terminal blocks		RFID technology MF: 13,56 MHz Blank: 13,56 Mhz & 125 kHz							

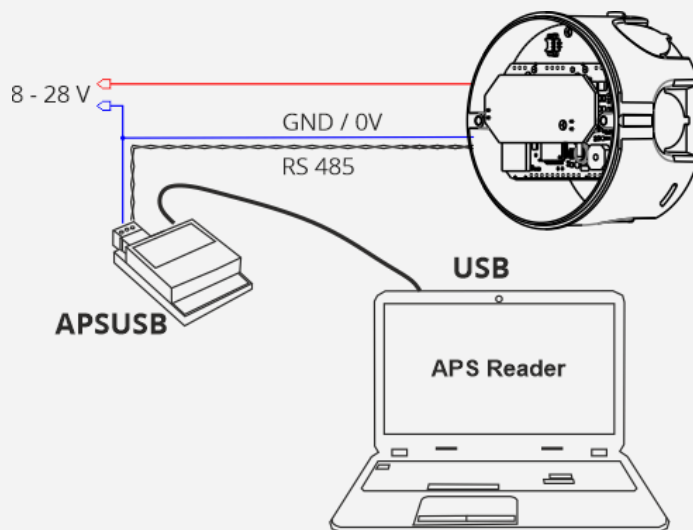
MIFARE®, MIFARE Classic®, MIFARE® DESFire® are registered trademarks, owned by NXP B.V.
Android® is registered trademark owned by Google LLC.

e. Block diagram

Full door control, connection to the door controller MWGD 82 DISGRT.



- Wiegand output configuration, firmware update.



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1 Technical parameters

1.1 Electrical parameters

PARAMETER	CONDITION	MIN	MAX	UNIT
Input voltage V_{in}		8	28	V
Typical current consumption I_{in}	$V_{in} = 8\text{ V}$ $V_{in} = 12\text{ V}$ $V_{in} = 24\text{ V}$		75 53 30	mA mA mA
Peak current consumption I_{in}	$V_{in} = 8\text{ V}$ $V_{in} = 12\text{ V}$ $V_{in} = 24\text{ V}$		106 73 42	mA mA mA
Typical input power			0,7	W
Maximum input power			1,1	W
Typical reading distance (ISO card)	125 kHz (EM Marin)	3	5	cm
	13,56 MHz (MIFARE® Classic®)	3	5	cm
Radiated H-field intensity @ 10 m	125 kHz		-11	dBuA/m
	13,56 MHz		-8	dBuA/m
Signalization	RGB led		1	pc
	Piezo		1	

1.2 Communication interface

INTERFACE DESCRIPTION	TECHNOLOGY	PROPERTIES
Service data bus	RS 485	19 200 bit / s, 8 datových bitů, sudá parita, 1 stop bit
Wiegand output	Wiegand	Formats 26, 32, 42, 44, 56 bits

1.3 Mechanical parameters

PARAMETER	VALUE	UNIT
Weight	66	g
Dimensions D, h	D 73,5; h 43,5	mm
Mechanical mounting	Inside installation box KU68-1901 Or surface installation box LK 80	
Colour	Grey	
Material	Plastic	PVC
Environmental class	Indoor device general	
Temperature range	-10 ÷ + 55	°C

2 Assembly

2.1 Wire connection to the plug-able terminal block of WREM 77 E / F

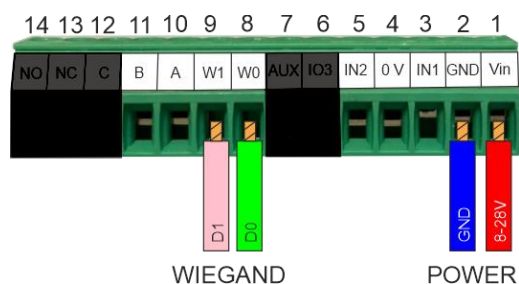
it is enough to connected only 4 wires to the door controller. It is recommended to connect the LED and buzzer control as well, so that the user can see and hear the response according to the performed action (valid card, invalid card, lock release time ...). The wires are connected to a plug-able screw terminal block.

WREM 77 E / F ISGRT

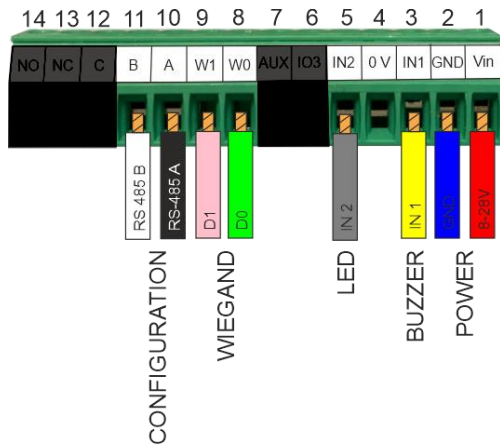
ČÍSLO	POPIS SVORKY	KAM VEDE (př.)
1	Input voltage Vin 8 ÷ 28 Vdc	Zdroj
2	Power ground GND	Zdroj
3	IN 1	MWGD 82
4	Signal ground 0 V	MWGD 82
5	IN 2	MWGD 82
6	Do not connect	
7	Do not connect	
8	Wiegand W 0	MWGD 82
9	Wiegand W 1	MWGD 82
10	Signal A service data bus	APSUSB*
11	Signal B service data bus	APSUSB*
12	Do not connect	
13	Do not connect	
14	Do not connect	

*For configuration, firmware update.

** LED and Buzzer can be controlled by the same signal together.



Picture 1: Minimum 4 wires are needed, power & wiegand data output.



Picture 2: Usage of all pins, configuration, LED & buzzer control included.

2.1.1 Inputs & Outputs

Input	Description
Input 1 (IN 1)	Buzzer control
Input 2 (IN 2)	LED control

2.2 Installation instructions

2.2.1 Reader installation

The WREM 77 reader is already delivered together with the KU 68-1901 or LK 80 installation box. The supplied cabling (eg standard UTP and power cables) are connected to a plug-able terminal block. The reserved space for the connection cabling in the KU 68 installation box must be taken into account. Check for any voltage drop on the supply wires so that it is not below $V_{in\ min}$. Use a separate pair of UTP cable (if used) for each Wiegand signal, do not connect the W0 and W1 signals together in one twisted pair.

2.2.2 RS 485 bus

It is recommended to bring a twisted pair for the RS 485 interface into the switchboard, to be able to update firmware or to configure WREM 77. On the contrary to wiegand interface, this bus must be connected in one twisted pair. Leave the jumper mounted on the PCB (termination of the RS 485 line). The actual configuration is performed using eg the APSUSB converter and the APS Reader program.

2.2.3 Radio signal interferences

If a product variant should read 125 kHz, it is necessary to take into account another 125 kHz reader in direct range - for example by both-sided door control. In this case, the readers may interfere with each other. In the techfass system, it is possible to use the so-called synchronization of reading between the reader and the reading module, which then do not interfere with each other.

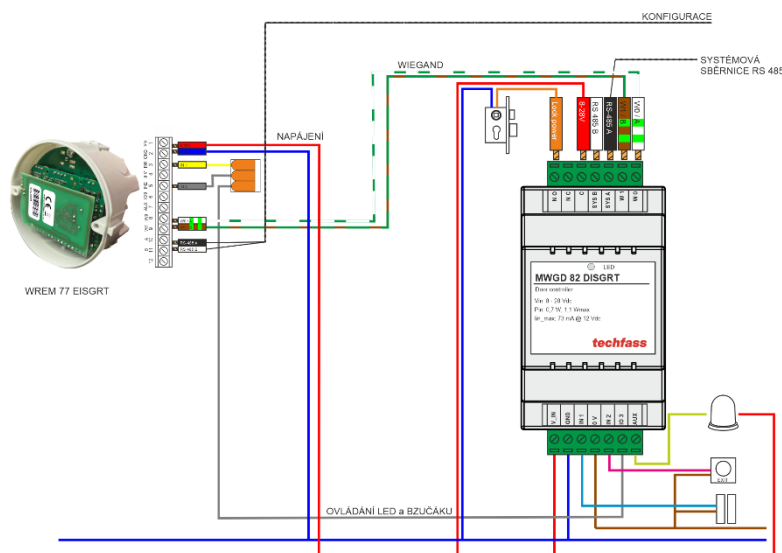
In general, if possible, avoid mounting on metal substrates, it is recommended to perform a practical reading test or contact support@techfass.cz.

Interference along the line, eg from an interfering power supply, can affect the reading distance or the reader's own communication.

3 Wiring diagram

3.1 Door control and connection to the door controller

The following figure shows the standard connection of the WREM 77 EISGRT and the MWGD 82 DISGRT door controller. After reading a valid card or other media with the WREM 77 reader, this ID was sent via a Wiegand output to the MWGD 82 controller, which evaluates it and, if it is valid, activates a relay that connects the power supply / control signal to the lock. At the same time, the controller switches the reader's IN1, IN2 signals to control the LED and the buzzer.

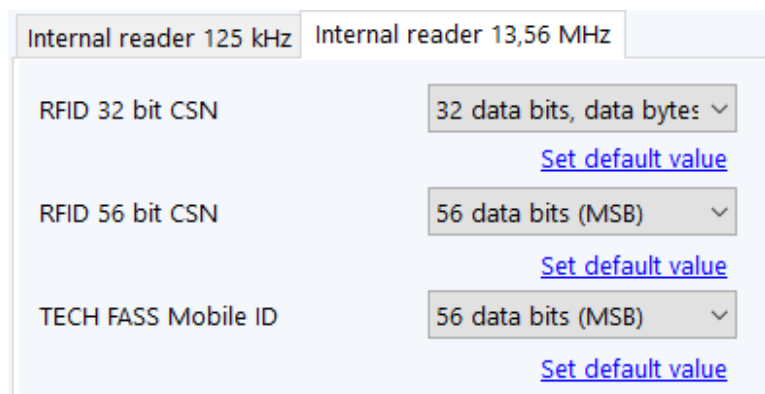


Wiring diagram 1: Connection of the WREM 77 E reader to the door controller. The controller itself can already be connected to the system bus and be part of the central management from a PC or from the cloud - via any web browser.

4RFID reading

4.1 Reading at 13,56 MHz

The device can read media (cards, key fobs, stickers) according to ISO / IEC 14443A at the level of reading the so-called UID. Examples of media technologies used are NFC and the MIFARE® product family. The device is also ready for so-called sector reading, but it is not active yet.



Print screen from APS Reader application.

32 bit CSN	56 bit CSN	TF Mobile ID
Disabled	Disabled	Disabled
32 data bits (MSB)	32 data bits (MSB)	32 data bits (MSB)
32 data bits, reversed (LSB)	32 data bits, reversed (LSB)	32 data bits, reversed (LSB)
24 data bits (MSB)	24 data bits (MSB)	24 data bits (MSB)
Facility code 0x01 + 16 data bits (MSB)	Facility code 0x01 + 16 data bits (MSB)	Facility code 0x01 + 16 data bits (MSB)
	56 data bits (MSB)	56 data bits (MSB)
	56 data bits, reversed (LSB)	56 data bits, reversed (LSB)

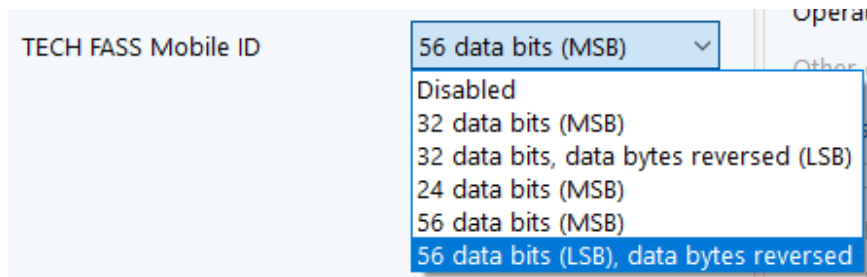
For the frequency 13,56 MHz, the format and length options of the so-called "card serial number" can be set according to the table above. Similarly for the TF Mobile ID mobile application.

4.1.1 Identification by mobile phone with OS Android 4.4+

Mobile phones equipped with NFC technology, OS Android 4.4 Kit Kat (or higher) can be used for identification (replaces the usual RFID card). You have to download TF Mobile ID application and follow its manual. The TF Mobile ID application is available for free download on Google Play.



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Android® is registered trade mark Google LLC.

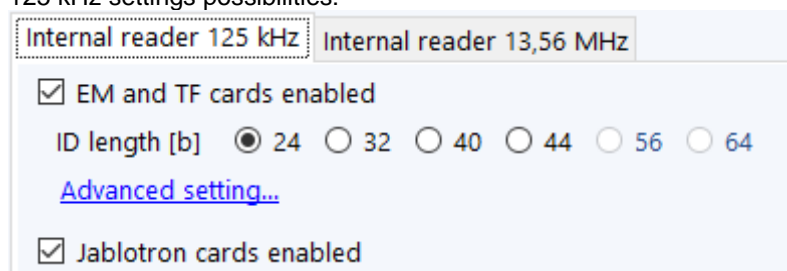


The TF Mobile ID read format and length setting options are shown in the image above (print screen from APS Reader).

4.2 Reading at 125 kHz

The EM or dual variant of the device can also read media with a frequency of 125 kHz like EM Marin (e.g. EM4200, EM4305). Next example of supported media technology is Jaboltron ID.

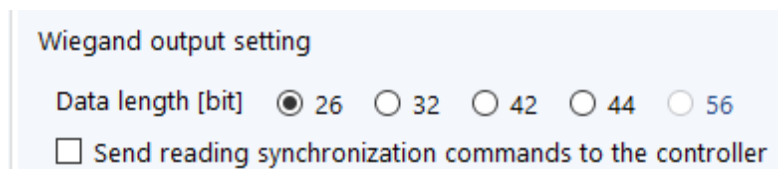
125 kHz settings possibilities:



Default settings for 125 kHz.

4.3 Dual reading at 13,56 MHz & 125 kHz

The dual variant of the device allows reading media according to 3.1 and 3.2 at the same time.



5 Settings

5.1 Setup procedure

If we want to set the reader parameters, e.g. its RFID parameters or Wiegand output, we must connect it to the computer and control software. Physical connection is possible using the device

via USB

APSUSB <https://www.techfass.com/cs/produkty/102/produkt/1216/apsusb>

via LAN

APSLAN <https://www.techfass.com/cs/produkty/102/produkt/94/apslan>

5.1.1 Software application

The desktop application for configuration and firmware update:

APS Reader <https://www.techfass.com/cs/produkty/101/produkt/389/aps-reader>

5.2 Indicative parts RGB LED and buzzer

PART	ACTION	DESCRIPTION
Red LED	Continuously lit	Power supply
Green LED	Flash	ID media reading, lock release (driven by signal IN2)
Yellow LED	Flash	According to the configuration
Buzzer	Buzzing	ID media reading, lock release (driven by signal IN1)

5.3 Configurable parameters

The WREM 77 reader allows RFID read configuration, ID bit length and Wiegand output format settings.

5.3.1 125 kHz

Enable / Disable

- Standard em marin & TF ID
- Jablotron ID

*Default settings: all enabled.

ID Length

125 kHz	bits				
ID	24	32	40	44	56

* Default settings: 40 bits format.

Wiegand output format settings

125 kHz	bits				
Data	26	32	42	44	56

*Default settings: 42 bits format.

5.3.2 13,56 MHz

32 bit CSN	56 bit CSN	TF Mobile ID
Disable	Disable	Disable
32 data bits (MSB)	32 data bits (MSB)	32 data bits (MSB)
32 data bits, reversed (LSB)	32 data bits, reversed (LSB)	32 data bits, reversed (LSB)
24 data bits (MSB)	24 data bits (MSB)	24 data bits (MSB)
Facility code 0x01 + 16 data bits (MSB)	Facility code 0x01 + 16 data bits (MSB)	Facility code 0x01 + 16 data bits (MSB)
	56 data bits (MSB)	56 data bits (MSB)
	56 data bits, reversed (LSB)	56 data bits, reversed (LSB)


6 Other

6.1 Legislation

The product is compliant with following harmonized directives of European Union.

EU HARMONIZATION RULES, STANDARDS, REGULATIONS
2014/53/EU; "RED"
2014/30/EU; "EMCD"
2014/35/EU; "LVD"; ČSN EN 62368 – 1
2011/65/EU "RoHS"
(ES) č. 1907/2006 "REACH"

6.2 Declaration of conformity

 The manufacturer TECH FASS Ltd. declares, that the product follows legal requirements and fulfils necessary European directives. The declaration of conformity document can be downloaded from our web site:
<https://www.techfass.com/en/download/11/conformity-declaration>

6.3 Electrical waste



According to WEEE directive (2012/19/EU), this product cannot be disposed of as unsorted municipal domestic waste and has to be returned to recycling center after its lifetime is over.

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TECH FASS s.r.o.

Věštinyá 1611/19, Praha