

# U-Prox-Keypad MF.

## Mifare reader. User manual



### Introduction

The Mifare U-Prox-Keypad MF reader with built in keypad is intended to be applied in different access control systems, using RS232, Wiegand 26, Wiegand 32, Wiegand 34, Wiegand 37, Wiegand 40, Wiegand 42 and Touch Memory interface.

The direct and reverse ID bytes order supported. Secure mode with reader and cards serialization available.

The interface type is to be changed by special PC program. If you need to change the interface type, please call your distributor. The reader placed in elegant plastic case with bicolor LED indicator and keypad on front panel.

### Types of cards

Integrated Technical Vision Ltd manufactures readers operating with various kinds of Mifare® cards: MIFARE® Standard, MIFARE® Hi-Memory, MIFARE® Ultralight, MIFARE® DESFire, MIFARE® CLASSIC 1k, MIFARE® Classic 4k, MIFARE® CLASSIC 7UID.

### Features

#### Case

Material	ABS plastic
Color	black
Dimensions	119.4 x 65.4 x17.5 mm
Weight	240 g

#### Ambient Conditions

Oper. temp.	-0°C . . . +60°C
Stor. temp	-0°C . . . +80°C
Humidity	100% rel. at +25 °C

#### Electrical

Voltage	+9. . . +16 VDC
Max current	up to 75 mA
Voltage ripple	up to 500 mV <sub>p-p</sub> .

### Read Range

Typical read range is 40...50 mm and depends on tag type used.

### Wiring

Reader has 8 wire cable for connecting to the access control panel.

Table 1. The wires assignment.

Color	Wiegand	RS232 (reader)	DB-9 (computer)
	Function		
Green	Data 0	Rx	3
White	Data 1	Tx	2
Red	+V	+V	
Black	GND	GND	5
Brown	Red Led	-	
Orange	Green Led	-	
Blue	Beep	-	
Yellow	Hold	Hold	

AWG22 multiwire signal cable is recommended.

Using this cable the maximum length of 150 meters can be obtained\*.

When you connect the reader to the interface TouchMemory (iButton), and it does not work consistently (for example, does not transmit the

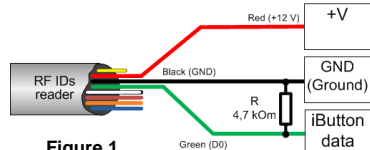


Figure 1

\* Not for RS232 interface

code identifier controller), you should use 4,7kOm resistor (supplied) installed between the terminal and iButton "Earth" reader, as shown in Fig. 1. When using twisted pair (STP, UTP, FTP) to connect the reader should be followed the order of connection shown in Fig. 2.

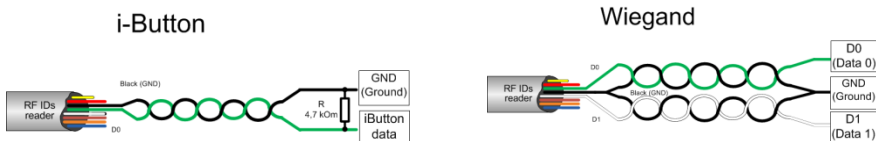


Figure 2

**Type of interfaces**

The proximity reader is intended to apply in different access control systems, using RS232, Wiegand 26, Wiegand 32, Wiegand 34, Wiegand 37, Wiegand 40, Wiegand 42 and TouchMemory interface.

**Mounting**

It is recommended to mount the reader on a wall closely to a door at appropriate height.

- ❗ Do not place the reader on the metal surfaces, since it causes decreasing of reading distance.

**Reader installation**

- Loosen the screw at the bottom of the reader.
- Remove the top cover, remove the back plate.
- Mount the back plate of reader on the wall using the fixtures provided (see fig. 1).
- Prepare all wires for connection and connect them to the reader in according to Table 1 and User Manual of the access control panel to be utilized.
- Insert the reader in the back plate (see fig. 2).
- Put the top cover and tighten screw at the bottom of the reader.
- Ensure that all locking tabs are securely engaged.

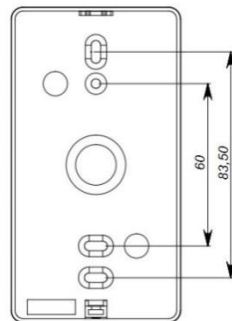


Figure 1

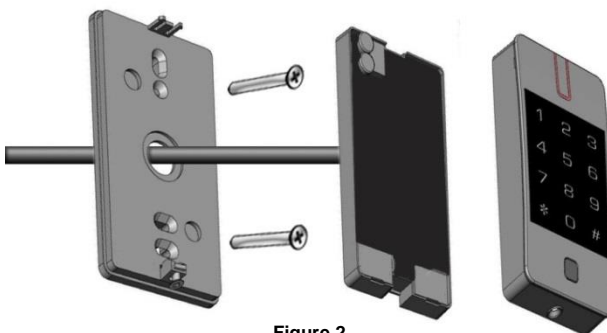


Figure 2

**The Reader Operation**

**The RFID Card Code Reading**

The card code reading is announced by built-in buzzer and LED lamp according to interface type and annunciation mode (see Section «Data transfer and Annunciation»). Repeated reading will be available after 0.75 sec if the card is removed from the reader sensing area.

**Data transfer and control of annunciation**

The reader is provided with two-colour LED indicators and buzzer. LED and buzzer function according to interface type programmed and annunciation mode.

**Wiegand Interface**

Engaging of LED and buzzer is possible automatically or by grounding of corresponding wire according to Table 2.

**Keypad codes**

Reader transmits keypad codes in one of the programmed modes – package or digit-by-digit.

In package mode reader stores up to 10 presses of '0' to '9' keys and transmits package after the '#' key press. If there are less than 10 digits pressed the leading digits filled with hexadecimal digit 'F'. The '\*' key press clears all previous key presses.

In digit-by-digit operation mode reader transmits the key code immediately after the key press with 6-bit package. The key codes are in the table below:

Key	Code transmitted		key	Code transmitted	
	(hex)	(binary)		(hex)	(binary)
0	01	000001	6	2C	101100
1	02	000010	7	2F	101111
2	04	000100	8	31	110001
3	07	000111	9	32	110010
4	29	101001	*	34	110100
5	2A	101010	#	37	110111

DORADO digit-by-digit operation. In this mode reader transmits the key code immediately after the key press with 8-bit package. The key codes are in the table below:

Key	Code transmitted		Key	Code transmitted	
	(hex)	(binary)		(hex)	(binary)
0	F0	11110000	6	96	10010110
1	E1	11100001	7	87	10000111
2	D2	11010010	8	78	01111000
3	C3	11000011	9	69	01101001
4	B4	10110100	*	5A	01011010
5	A5	10100101	#	4B	01001011

**Table 2. Annunciation mode:**

Data transmissions from reader comply with standard Wiegand26, Wiegand32, Wiegand34, Wiegand37, Wiegand40, and Wiegand42.

	Buzzer	Red LED	Green LED
00	Beep on card read	LED normally on, switch off at reading	Blinking at reading
01	Control from outside	LED normally on, switch off at reading	Blinking at reading
02	Beep on card read	Switch off	Blinking at reading
03	Control from outside	Switch off	Blinking at reading
04	Beep on card read	LED normally on, switch off at reading	Control from host
05	Control from outside	LED normally on, switch off at reading	Control from host
06	Beep on card read	Control from host	Control from host
07	Control from outside	Control from host	Control from host
08	Beep on card read Possibly to control from outside	LED normally on, switch off at reading Possibly to switch off from outside	Blinking at reading Possibly to switch on from outside

Data transfer depends on interface type. For TouchMemory interface it is identifier Type 01 according to DS1990.

Depending on length of Wiegand interface used, data transmitted for MIFARE® Classic 1K, may vary as shown in table below for card ID B8 26 E0 FC. The first byte in this ID is XOR of all bytes of ID:

	Direct order	Reverse order	Parity bits
W26	0-26E0FC-1	1-FCE026-0	+
W32	B826E0FC	FCE026B8	-

W34	1-B826E0FC-0	1-FCE026B8-0	+
W37	1-0B826E0FC-1	1-0FCE026B8-0	+
W40	B826E0FC82	FCE026B882	-
W42	1-00B826E0FC-0	1-00FCE026B8-0	+

**Interface RS232**

To control annunciation send control packet to the reader. Packets should be transmitted with 2 400 baud rate, 8 bit data, no parity, 1 stop bit.

Table 3. Packet format

Bit	7	6	5	4	3	2	1	0
Byte 0	0	1	0	0	1	0	0	1
Byte 1	-	-	red LED blinking	-	red LED lit	-	-	-
Byte 2	green LED lit	-	green LED blinking	-	-	Buzzer beeps	-	Buzzer continuous

1 – corresponds LED or buzzer switched on. LED blinking and buzzer ‘beeps’ control bits have the highest priority.

Annunciation does not change until next control packet received.

Reader transmits data as follows:

# of byte	0	1 ... 10	11	12	data:	bit	7	6	5	4	3	2	1	0
Dest.	23h	data	checksum	0Dh		Value	0	0	1	1	x	x	x	x

Check-sum: exclusive OR of low nibbles of bytes from 1 to 10, high nibble of always must be 3h.

**Example:** Card code 7E000460AA will be sent as:

23h, 37h, 3Eh, 30h, 30h, 30h, 34h, 36h, 30h, 3Ah, 3Ah, 3Bh, 0Dh.

**Serialization<sup>†</sup>**

The readers may be serialized for use in secure applications, with specially encoded cards. Serialized readers will read only cards emitted for them and will not read other Mifare cards. For convenient use reader still transmits unique card ID but only for cards encoded for the reader. For not encoded cards reader transmits nothing. Contact your distributor for details.

**Limited Warranty**

Integrated Technical Vision Ltd. warrants that for a period of eighteen months from the date of purchase, the product shall be free of defect in materials and workmanship under normal use and that in fulfillment of any breach of such warranty, Integrated Technical Vision Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not damages incurred in shipping or handling, or damages due to causes beyond the control of Integrated Technical Vision Ltd. such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Integrated Technical Vision Ltd. This warranty contains the entire warranty. Integrated Technical Vision Ltd. neither assumes, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any warranty or liability concerning this product.

In no event shall Integrated Technical Vision Ltd. be liable for any direct, indirect or consequential damages. Loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

<sup>†</sup> For Mifare 1K cards only