

A programmable reader for mobile, Mifare® and Mifare®Plus identifiers

U-Prox mini MF

User manual

Introduction

U-Prox mini MF reader is intended to be applied in different access control systems, using RS232, Wiegand 26, Wiegand 32, Wiegand 34, Wiegand 37, Wiegand 40, Wiegand 42, Wiegand 56, Wiegand 58, Wiegand 64, Wiegand auto and TouchMemory interface. The direct and reverse ID bytes order supported. Personification of mobile and Mifare® identifiers is supported by setting an additional secure mode.

Reader supports 2 operation mode for smartphones with U-Prox ID:

- "Door" - up to 60-70 cm
- "Barrier/Gate" - adjustable range of interaction from 1 to 15 m.



Identifiers types

U-Prox mini MF proximity reader operates with various kinds of Mifare® cards: Mifare® Plus (SL1 and SL3 modes), MIFARE® Standard, MIFARE® Ultralight, MIFARE DESFire, MIFARE CLASSIC 1k, MIFARE Classic 4k, MIFARE CLASSIC 7UID and/or U-Prox IDs.

The adjustment of the reader, its interface and identifiers' type settings is provided with mobile application. The reader can be programmed to operate with Mifare® and/or U-Prox ID.

Design

The reader has elegant plastic sealed enclosure with IP66 class.

Benefits

Case Material	ABS plastic
Color	black, gray, white
Dimensions	42,8x80x12,5 mm
Weight	70 g
Ambient Oper. temp.	-35°C . . . +60°C
Conditions	Humidity 100% rel. at +25 °C
Power	Voltage +9. . . +15 VDC
Supply	Max current up to 80 mA Voltage ripple up to 500 mV _{p-p}

Colour	W2 / W3 / W4 / WS	RS232	DB-9	Touch Memory
Functions				
Green	Data 0	Rx	3	iButton
White	Data 1	Tx	2	-
Red	+V	+V		+V
Black	GND	GND	5	GND
Brown	Red Led	-		Red Led
Orange	Green Led	-		Green Led
Blue	Beep	-		Beep
Yellow	Hold	Hold		Hold

Read range

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

Wiring

Reader has 8 wire cable for connecting to access control panel. The reader terminal functions are listed in the table above (+V - external source +12 V): We recommend to use multi-core signal cable with 0.22 mm² cross-section of each wire between reader and panel.

minimum distance to panel is up to 150 m (Wiegand interface) with this cable.
Refer to the Figure 1 for twisted pair reader connection to the panel.

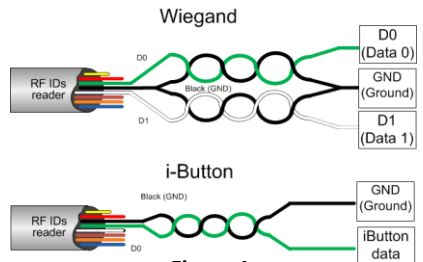


Figure 1

Types of interfaces

Depending on modification, reader supports one of the following interfaces: Wiegand 26, 32, 34, 37, 40, 42, 56, 58, 64 or standard with automatic selection (W26, W32, W34, W37, W40, W42, W56, W58, W64), RS-232C (RS), enhanced encrypted RS Pro protocol or TouchMemory.

Mounting

We recommend to install reader on the wall next to the door from the lock side. Reader should be installed in the way that is convenient for all users. Make small recess or hole (diameter is 14 mm) to connect cable under the reader's case. Do not place the reader on metal surfaces, since it causes decreasing of read range. If more than one reader is used in the system, place them not closer than 20 cm one from another to eliminate the effect of double reading.

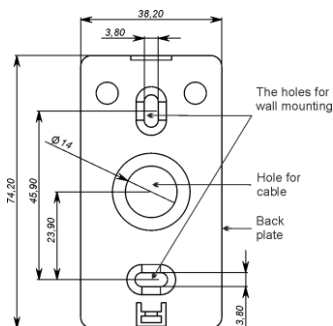


Figure 2

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. 2).
- 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. 3).
- Put the top cover and tighten screw at the bottom of the reader.
- Ensure that all locking tabs are securely engaged.

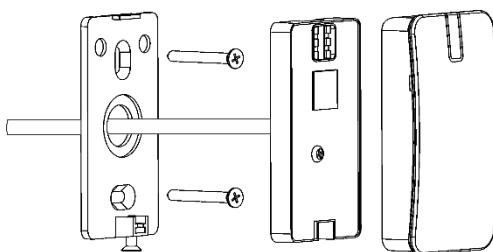


Figure 3

The Reader Operation

RFID Card Code Reading

Code is read when a valid RF ID is passed.

Card code reading is annunciated by embedded buzzer and LED lamp according to the interface type and annunciation mode (see Section «Data transfer and Annunciation»).

Subsequent reading will be available in 0.8 sec only after card removed from the reader sensing area.

U-Prox ID code reading

Download and install mobile software U-Prox Mobile ID. It enables to receive, store U-Prox ID and transfer ID code between reader and smartphone.

Get the U-Prox ID identifier from U-Prox Desktop locally, or remotely by e-mail or QR code.

Hold mobile device near the reader (standard distance is 10-40 cm) and press the button "Open" in app.

The application will execute data exchange. The card code reading is annunciated by embedded buzzer and LED according to the interface type and annunciation mode (see Section «Data transfer and Annunciation»)



U-Prox ID

Hold Mode

Reader turns to the hold mode while yellow wire is shorted to ground. In this mode, reader does not read cards that reduces the current consumption to 25 mA.

Relay or an open collector transistor can switch on hold mode.

It is prohibited to supply the external voltage to the yellow wire!

Data transfer and Annunciation

Reader has bicolour LED indicators and buzzer. Their control depends on the interface type.

Wiegand Interface

Engaging of LED and buzzer is automatic or by grounding of corresponding wire (see Section «Wiring»)

Annunciation mode:

	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 panel
05	Control from outside	LED normally on, switch off at reading	Control from panel
06	Beep on card read	Control from panel	Control from panel
07	Control from outside	Control from panel	Control from panel
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 from the reader corresponds to the standard specified.

Interface RS232

Reader transmits the packet with card code after RF or U-Prox ID successful read.

Panel has to send control packet to the reader for annunciation control. RS232 setting are 2400 bps rate, 8 bit data, 1 stop bit.

Packet format:

Bit	7	6	5	4	3	2	1	0
byte 0	0	1	0	0	1	0	0	1
byte 1	-	-	red blinks	-	red on	-	-	-
byte 2	green on	-	green blinks	-	-	buzzer pulsatory	-	buzzer uninter-ruptedly

1 – corresponds to LED or buzzer switching on. LED blinking and buzzer pulsatory control bits have the highest priority.

Annunciation does not change until next control packet is received.

Reader transmits data as follows:

byte #	0	1...10	11	12
Card read	23h	data	C sum	0D h
PIN entered	21h	data	C sum	0D h

data:

Bit	7	6	5	4	3	2	1	0
Format	0	0	1	1	X	X	X	X

Checksum: 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.

Personalization mode

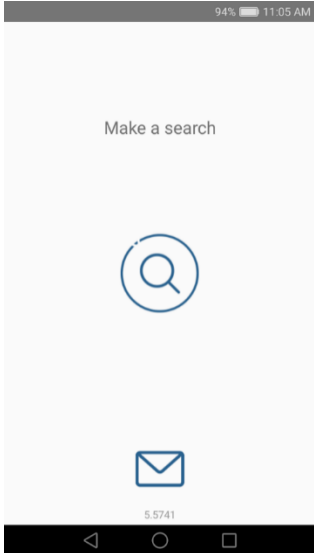
In personalization operation mode reader transmits code only after U-Prox ID or Mifare ID encrypted with valid key successful read.

Reader programming

Download and install mobile software U-Prox Config. It provides the total reader configuration.

Run the reader in the programming mode – short D0 (green) and D1 (white) terminals with each other and power up the reader.

Attention!!! «To access, shorten green and white wires and then restart reader» message appears in the program window in case of unauthorized connection attempt (D0 and D1 terminals aren't shorted).



symbols

Start U-Prox Config, press "Search" button and then device search will be started.

After scanning, select reader from list and press "Connect" button to upload reader settings.

Main application menu available for the reader settings adjustment, up - and downloading, save or restore reader settings for future use (as template) and update its firmware, after successful upload. You can check the serial number and firmware version of device, set ID types for reader operation, type of front-end interface and annunciation modes in the "Settings" section.

You can also switch on personalization mode by setting encryption password of mobile identifiers U-Prox ID and performing advanced settings for Mifare® - encryption password, data read range and encryption mode.

Password length:

- for U-Prox ID – 8 hexadecimal symbols
- for Mifare® Classic – 12 hexadecimal symbols
- for Mifare® Plus into SL1 mode - 12 hexadecimal symbols
- for Mifare® Plus into SL3 mode - 32 hexadecimal symbols



U-Prox Config

Item "Record to device" will be available in the main menu after setting up reader. Application downloads new settings into the reader after 'Record to device' button press.

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.