User manual of iPR-x proximity readers

iPR-2 iPR3 iPR6 iPR-7 iPR-8 iPR-9

Function

iPR-x proximity readers is intended to be applied in different access control systems, using RS232, Wiegand 26, Wiegand 37 or Wiegand 42 interface. (Reader iPR-9 have with built-in keypad).

Types of identificators

Smart Innovations manufactures readers operating with amplitude modulation (ASK) proximity cards and tags.

Design

The reader is placed in miniature hermetic plastic or vandal-proof of polished stainless steel (iPR-3) case. Thanks to the small overall dimensions the reader is distinguished for its advanced reliability.

Specifications

Warm-up time 10 seconds after power start

Case

Material ABS plastic (1.5 mm thick stainless steel iPR-3)

Dimensions

	iPR-2	iPR-3	iPR-6	iPR-7	iPR-8	iPR-9
mm	150x45x22	110x80x15	95x50x16	95x50x16	105-200	105-200

Weight

	iPR-2	iPR-3	iPR-6	iPR-7	iPR-8	iPR-9
gramm	50	150	105	105	94	94

Ambient Conditions

Temperature -35 . . . +65 ^{0}C

Humidity 100% (without condensate)

Power supply

Voltage +9. . . +16 V of direct current

Current up to 50 mA

Maximal current up to 80 mA

Voltage ripple up to 500 mV.

Distance of reading

Typical reading distance show in table 1 and depends on tag type used with it. This parameter is valid for power supply voltage range from +9 to +16 VDC and ripple up to 150 mV_{p-p}.

Table. 1

Reader type	iPR-2	iPR-3	iPR-6	iPR-7	iPR-8	iPR-9
Distance, mm	150-160	35-40	105-200	140-150	105-200	105-200

Wiring

Reader has 8-wire colored cable intended for connection to access control panel.

Table 2. The wires assignment:

Multiwire signal cable with 0.22 mm^2 wires' cross-sectional is recommended to use for connection of the reader and control panel. Using this cable the maximum length of 50 meters can be obtained.

Type of interfaces

The proximity reader is intended to be applied in different access control systems, using RS232, Wiegand 26, Wiegand 37, Wiegand 42 or TouchMemory interface.

Table. 2

	W2/W3/W4/WS	RS232
Color	Function	
Green	Data 0	Rx
White	Data 1	Tx
Red	+V	+V
Black	GND	GND
Brown	Red Led	–
Orange	Green Led	–
Blue	Beep	–
Yellow	Hold/Synch	Hold/Synch

Mounting

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

! Do not mount the reader on metal surface, since it causes decreasing of reading distance.

! If two readers are mounted at a distance less than 50sm, reading distance of a card may be reduced appreciably. In such a case, connect yellow wires of the readers. The readers will synchronize and work in turn.

! Synchronization allows mounting of two readers at a small distance, to the extent of reading distance of a card. In case that, two readers are mounted at a distance less than reading distance of a card the card may be read by the reader behind the wall.

To mount the iPR-2, iPR-3 readers proceeds as follows:

- Connect the reader to the control panel's cable

- Using the body reader as a template mark and then drill two (four) openings 6mm in diameter and 35mm deep
- Secure the mounting plate on a wall using plastic nailing plugs and screws

To mount the iPR-6, iPR-7 readers proceeds as follows:
- Remove cover from reader
- Connect the reader to the control panel's cable
- Secure the mounting plate on a wall using plastic nailing plugs and screws
- Secure cover to the reader. Ensure thet all locking tabs are securely.

To mount the iPR-8, iPR-9 readers proceeds as follows:
- Remove the boot in the bottom part of the reader with loosing the screw
- Push mounting panel towards the screw and remove it from the reader
- Using the mounting panel as a template mark and then drill two openings 6mm in diameter and 35mm deep
- Pass the wire through central opening
- Secure the mounting plate on a wall using plastic nailing plugs and screws
- Connect the reader to the control panel's cable
- Put on the reader on the mounting plate, push the case down against stop and secure the reader with the screw
- Put on the boot

The Reader Operation

Reading of identificator code

The code reading is annunciated by built-in buzzer and two-color LED according to interface type and annunciation mode (refer to «Data transfer and Annunciation»).
Repeated reading will be available after 0.8 sec if the identificator is moved away from the reader sensing area.

Hold Mode

Reader is turned to the hold mode while yellow wire is closed to the ground. In this mode reader does not read cards, thus current consumption decreases to 25mA.

! Do not apply voltage to hold outlet!

Data transfer and Annunciation

The reader is provided with two-color LED and built-in buzzer. LED and buzzer function according to interface type programmed and annunciation mode.

Wiegand or TouchMemory Interface

Engaging of LED and buzzer is possible automatically or by closing of corresponding wire to the black wire (GND) according to Table 2.
Table 2. Annunciation mode:

x	Buzzer	Red LED	Gren LED
00	Beep on card read	Normally ON, switched OFF at reading	Blinks at reading
01	Outside control	Normally ON, switched OFF at reading	Blinks at reading
02	Beep on card read	Switched OFF	Blinks at reading
03	Outside control	Switched OFF	Blinks at reading
04	Beep on card read	Normally ON, switched OFF at reading	Outside control
05	Outside control	Normally ON, switched OFF at reading	Outside control
06	Beep on card read	Outside control	Outside control
07	Outside control	Outside control	Outside control
08	Beep on card read. Availability to switch ON from outside	Normally ON, switched OFF at reading. Availability to switch OFF from outside	Blinks at reading. Availability to switch ON from outside

Data transmissions from reader comply with the standard specified. Protocol for TouchMemory interface from family 01 (to satisfy the requirements DS1990).

RS232 interface

To control annunciation send three-byte control packet to the reader. Packets should be transmitted with 2 400 bits per second, 8 bit data, no parity, 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 steady	-	-	-
byte 2	green steady	-	green blinks	-	-	buzzer pulsatory	-	buzzer uninterruptedly

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
Destination	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.

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