PREMIUM-MF RFID card reader

PREMIUM-MF 13.56 MHz MIFARE reader

The PREMIUM-MF type is a contactless reader device in the frequency range of 13,56 MHz. This reader will read the unique ID number of a Mifare® card and output that code in any of many user selectable formats.
Due to the fully potted housing, the reader can be installed both indoors and outdoors.
An integrated DIP-switch allows easy selection of 1 of 13 possible output formats.
A three-colour LED indication and audible tone enhance user feedback. Both beeper and LED's can be controlled by the host system.

Specifications :

➢ Power supply :	DC +5,0V to 13,6V
➢ Power consumption :	Typ. 100mA
➢ Transmitting Radio Frequency :	13.56 MHz
➢ Supported transponders :	Mifare® Std, Mifare® Ultralight, Mifare® DESFire, Mifare® PLUS S/X Contactless interface as per specification: ISO/IEC 14443 Type A NFC Passive mode (ISO 18092/NFC passive mode, initiator, selected tag types a.o. NTAG203, NTAG213)
➢ Typ. read range (@ 12V):	ISO card with 50mm coil : 50 mm
➢ Typ. read range (@ 5.0V):	ISO card with 50mm coil : 30 mm
➢ Indications :	3 LEDs (Greed/Red/Yellow) + Buzzer Buzzer emits a 60ms beep at 4 kHz when a transponder is read. In addition buzzer operates while BUZZER input is pulled low
➢ Data Output format :	DIP-switch selectable : - Wiegand (58-bit, 42-bit, 34-bit and 26-bit) - Clock & Data (13, 10, 9 or 8 characters) - Basic Clock&Data – 56 bits - RS232 (9600, 4800 or 2400 Bd) (EIA level) - TTL (9600, 4800 or 2400 Bd)
➢ Transmission :	Continuous (while tag in the field) or single transmission
➢ Connections :	10-wire cable (1 m length)
➢ Weight :	90g
➢ Operating Temperature :	-20°C ~ +60°C
➢ Mounting :	Mullion or wall mount (Extra mounting plate is supplied with each reader)
➢ Dimensions :	89 x 45 x 16 mm (dimensions mounting plate : 89 x 45 x 7 mm)

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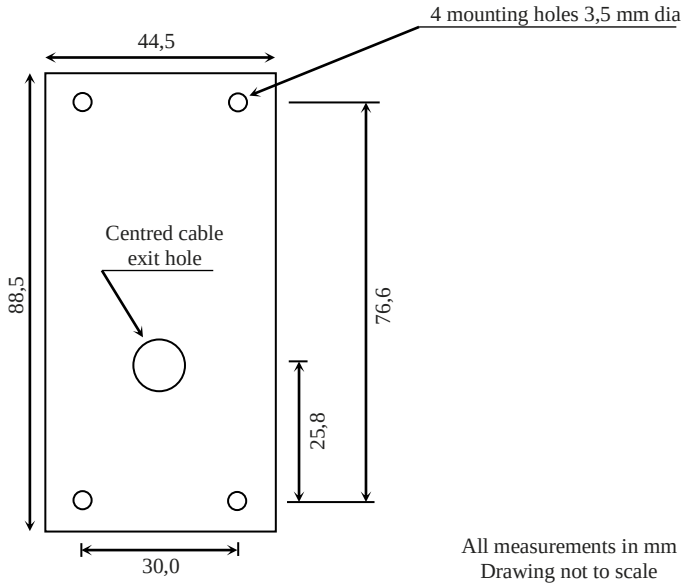
Physical dimensions and mounting details :



All measurements in mm
Drawing not to scale

If the mounting plate is used the reader cable may be brought out of one of four exit points on the mounting plate: top, bottom, left or right. This enables the cable to be run on the surface of the wall.
If no mounting plate is used, a minimum hole size of 6,5 mm must be drilled in the wall at the cable exit position as shown above to allow the cable to exit perpendicular to the reader.

The optional mounting plate may also be used when mounting the reader on a metal surface to reduce the negative effects of metal on the read range.

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Connections :

Colour	Name	Function
BLACK	0V	Connect 0V from power supply.
RED	+VDC	Connect +5V - +13.6V from power supply
PURPLE	RS-232 TX	Output RS-232
BLUE	BUZZER	Controls Buzzer
GREEN	GRN-LED	Controls Green LED in LED Mode 1 or both Red and Green LEDs in LED Mode 2
ORANGE	RED-LED	Controls Red LED in LED Mode 1
YELLOW	YEL-LED	Controls Yellow LED in LED Mode 1
BROWN	DATA / DATA1	Outputs RFID tag code in selected format
WHITE	CLOCK / DATA0 / TTL-TX	Outputs RFID tag code in selected format
GREY	CARD PRESENT	Pulses low when an RFID tag is detected. It stays low while the module output is active

Note : LED and BUZZER inputs are active low. The input is internally pulled high and may be pulled low by an open collector transistor or driven low by the output of a 5V CMOS or TTL gate.

Output mode selection:

The 6-way switch is used to select the output format and LED mode. The required setting is selected from the following tables:

Output mode table

SW1	SW2	SW3	SW4	Output mode
ON	ON	ON	ON	Inhibit – Turn off coil
ON	ON	ON	OFF	Not used
ON	ON	OFF	ON	Not used
ON	ON	OFF	OFF	Basic Clock/Data 56 bits
ON	OFF	ON	ON	RS232 – 9600,n,8,1 – variable length
ON	OFF	ON	OFF	RS232 – 2400,n,8,2 – fixed length
ON	OFF	OFF	ON	RS232 – 4800,n,8,2 – fixed length
ON	OFF	OFF	OFF	RS232 – 9600,n,8,1 – fixed length
OFF	ON	ON	ON	Clock/Data 8 characters
OFF	ON	ON	OFF	Clock/Data 9 characters
OFF	ON	OFF	ON	Clock/Data 10 characters
OFF	ON	OFF	OFF	Clock/Data 13 characters
OFF	OFF	ON	ON	Wiegand 58 bits
OFF	OFF	ON	OFF	Wiegand 26 bits
OFF	OFF	OFF	ON	Wiegand 34 bits
OFF	OFF	OFF	OFF	Wiegand 42 bits

LED mode table

Mode #	SW5	LED Mode
1	ON	3 Individual LED's each controlled by their own input
2	OFF	RED/GREEN with single control line (GRN-LED)

Note :
In LED Mode 2, both RED and GREEN leds are controlled by the GRN-LED input. When the GRN-LED input is floating or pulled high, the RED led is on and the GREEN led is off. When the GRN-LED input is pulled low (connected to 0V) the GREEN led is on and the RED led is off. The YELLOW led is always off.

Continuous/Single Transmission Mode Table

Mode	SW6	Operation
Continuous	ON	While a tag is in the reader's field the reader will continuously transmit the code in the format chosen by DIP-switches 1-4. The repetition period is dependent on the format chosen but varies between 65ms and 100ms.
Single	OFF	Single transmission when tag is brought into the field. Tag must be removed from field for at least 1 second before a read of this tag is possible again.

Note :
This "continuous transmission" mode can not be guaranteed to work properly on some controllers, depending on the data interfaces. However, the "single transmission" mode will work with all controllers.
It is therefore recommended to test this function prior to site activation.

Power Connections :

The reader has an internal low dropout 5V regulator and so for maximum performance the input voltage must be smooth DC between 5.5V and 13.6V. The reading distance is unchanged for input voltages between 5.5V and 13.6V. For input voltages below 5.5V the read range drops off slightly as given in the specifications earlier. If 5V is supplied to the reader this should be noise-free to achieve maximum possible read ranges.

Tuning the antenna :

Under the front cover is a variable capacitor, which may need to be adjusted to re-tune the antenna in different environments. To tune the antenna, switch SW6 on (continuous mode). Now put a card in the field and adjust the variable capacitor until the unit is beeping repeatedly (beep...beep...beep...beep...). The best tuning is when the gap between beeps is shortest.

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Mifare transponder UID architecture :

Since the PREMIUM-MF supports different Mifare transponder types (mifare® Std, mifare® Ultralight, mifare® DESFire, mifare® PLUS S, mifare® PLUS X), please keep in mind that each of these types have different UID lengths.

Mifare Classic : 4 bytes
Mifare Plus S : 4 bytes

Mifare DESFire : 7 bytes
Mifare Ultralight : 7 bytes
Mifare Plus X : 7 bytes

Therefore if the complete UID needs to be read, it is essential to select an interface that will output sufficient data. For Mifare transponder versions with a 7 byte UID (mifare DESFire, Ultralight, Plus X), one of the following output modes is required in order to get the complete UID :

- Basic Clock/Data 56 bits
- Wiegand 58 bits
- RS232 variable or fixed length mode

Please contact your dealer if you require further details below on these output modes.

Declaration of Conformity :

ProxTech International bvba hereby confirms that the product PREMIUM-MF is in accordance with the essential demands and other relevant stipulations of the directive 1999/5/EG.
A copy of the Declaration of Conformity can be obtained upon simple request by e-mail on info@proxtech.com.

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