

Shanghai Zenkore Electronic Technology Co., Ltd.

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**Contactless Reader System
Introduction and Installation Manual**

Vision 1.0



Directory

Device Introduction

i. ZMR100 Home-School Management Reader

1、Product Overview

ZMR100 Home-School Management Reader is a Long Range Reader, which operates on the 2.45GHz frequency band using Ultra RFID Technology. With the long range identification ability, you are able to make use of it to achieve operational functions, which is needed in your organization.

2、Feature

- ISM Band

Work at globally free 2.45GHz ISM band.

- Integrated Design

The design is integrates reader and antenna and built-in directional antenna internally.

- Long Distance Reading Ability

Maximum Identification distance is meter to 80 meters.

- Multiple Communication Interface Modes

Communicate with computer through weigand/RS232/485/CAN/ RJ45. The reader could running independently and also could made bus-locale or outlying-transport that connect to the equipment and system conveniently.

- Advanced Anti-collision Techniques

Support multi-tags read and write, simultaneously identifying up to 200 tags.

- Preventive of Interferences

Applied channel isolation technology, no interferences between equipments, and meets harsh industrial environment requirements.

- Compact Appearance and Easy installation

The appearance is compact and the outside has condition light, it support two ways of pillar and wall, installing the bracket to adjust the angle.

3、Product Specifications

Operating Frequency: 2.45GHz

Modulation: MSK

Traffic Rate: 250kbps

Polarisation: Circular

Reading Angle: 90°

Channel Settings: Settable, 12 channels with channel spacing of 5.83MHz

Reading Range: Settable, up to 0.5 ~ 80 meters

Detection Speed: 200km/h

Operating Voltage: 12VDC

Operating Current: 200mA

Output Interface: CAN、RJ45、RS232、RS485、Wiegand

Relay Outputs: 1 Output, 1 Input

Operating Temperature: -40°C ~ +80°C

Dimensions: 25×25×4cm

Weight: 3kg

Materials: ABS upper cover, stainless steel back cover

Protection Grade: IP65

ii. ZMT120 Home-School Management Tag

1、Product Overview

ZMT120 Home-School Management Tag has new appearance and it specialized design for Student Leaving and Arriving System. There is a transparent panel on the front and you can put student's photos and information under the panel that it not only show the information of students, but also protect the card information from the damage.

2、Features

- Double Frequency Tags

It integrated 13.56MHz tag and "School One Card System" compatible.

- Passive Operation Model

Once enter the reader's identification area, tags will be wake up and launch the sign.

- Ultra-Power Design

It takes ultra-power design that make the using time much longer.

- Auto-Identify Direction

Tags can identify the direction with ZMC120 Activator.

- Active Call for Help

It has active call police button and also support "One Button SOS" function.

- Micro Radiation

Tags is on silent state at most of the time and its radiation is lowest.

- Change Battery Easily

It is convenience to change battery that user can change it by himself.

3、Product Specifications

Operating Frequency: 2.4050-2.475.00GHz

Modulation: MSK

Traffic Rate: 250kbps

Identification: 32 bit Unique ID, 8 Digit Card Number

Operating Mode: RTF, Passive

Detection Range: Settable, 0.5m~80m depending on the Reader

Channel Settings: Settable, 12 channels with channel spacing of 8.53 MHz

Lifespan: 5years

Operating Temperature: -40°C~+80°C

Dimensions: 85.5 x 54 x 4.5mm

Weight: 20g

Material: ABS+PC

Encapsulation: IP65

Installation Manual

i. Installation Notes

Please read this installation manual and make sure all devices and accessories are complete and intact before you install devices.

Before installation, observing using environment on site carefully is necessary. Then, consider how to install to make communication achieve the best condition effect between reader and tag, and there is no too big signal coverage area between two readers.

The installation must follow the following three principles:

1、Under normal circumstances, the reader should be formed in parallel with the tag facing the state.

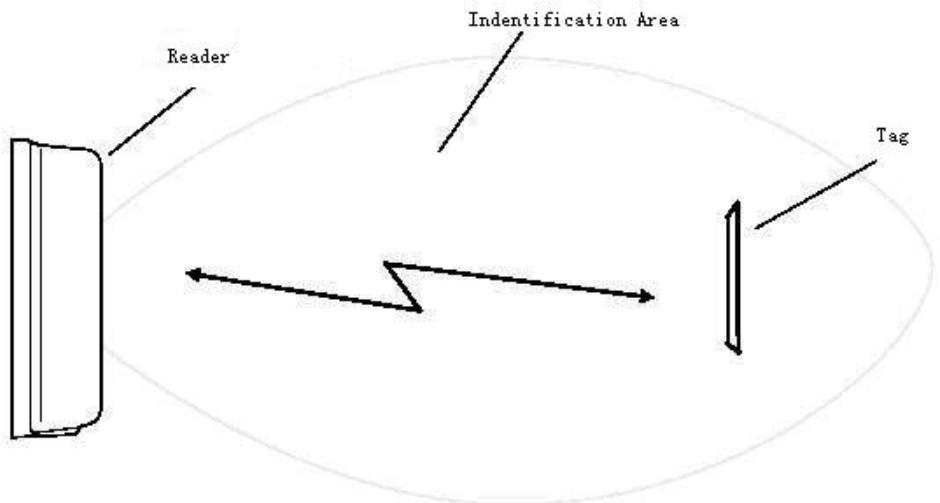
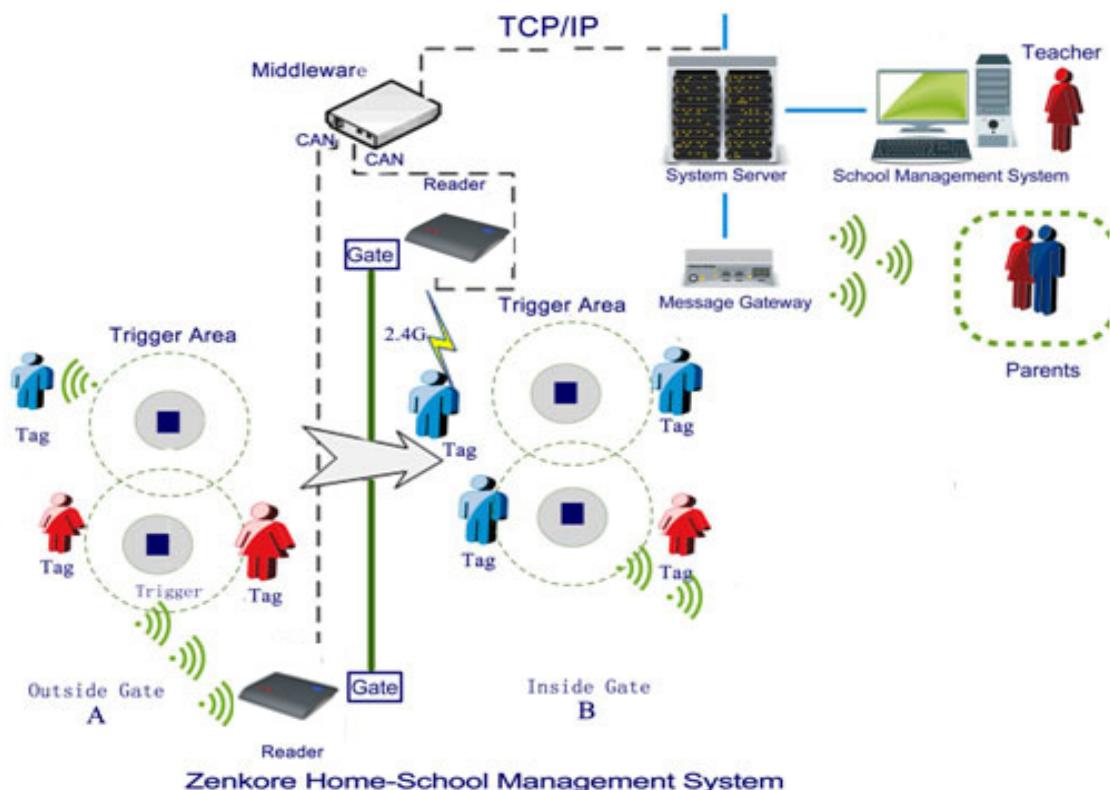


Figure 1: Schematic diagram of the reader signal transmission

- 2、 Try to keep the interval 10 meters between the two readers and make readers' signal can cover all personnel entering and leaving channel.
- 3、 Suggest the school gate is opened no more than 10 meters to ensure stable and reliable signal.

ii. System Topology Diagram



When installing, first determine the installation site and two readers should be installed on both sides of gate.

Then, arrange RS485 signal lines and power lines. At last, connect reader and smart terminals for the test.

iii. Reader Installation

1. Reader Construction

a) Reader Front and Sides Panel Introduction

Reader Appearance:

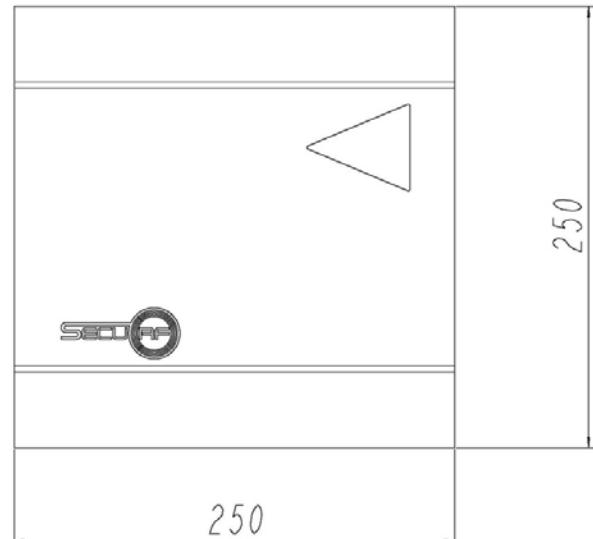
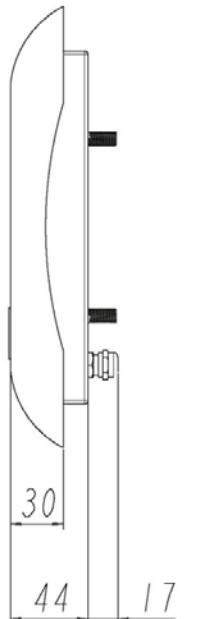


Figure 3: Reader appearance and size introduction

b) Reader General Construction

Reader consists of two parts: ABS materials upper cover and stainless steel materials back cover.

Directional antenna, which is installed in cover parts and control system, which is installed under the cover, both connected via data lines.

c) Power Interface

Reader works with DC power supply, power supply voltage of 12V. Power connects to the POWER port on the reader control panel, and powers' positive pole is connected to VCC port and

negative pole is connected to GND port. The diameter of the power line (including external plastic part) should be less than 3mm. Firstly, strip out about 8 mm long wire core from Power line's thread. Second, press the orange shrapnel to the back and insert power line into the round hole on reader control panel. At last, release the orange shrapnel, pull the power line and make sure they have good contact.

200mA current is the minimum Power supply current which can ensure the reader work.

d) RS485 Interface

Reader connects the Smart Terminals through RS485 Interface which contains 485A+, 485B- and GND three signal lines. Reader corresponding connects with 485A+, 485B- signal lines on Terminals, but GND no need connected.

2. Install Reader

a) Installation Preparation

Ensure all devices and accessories are complete and intact. If not, contact manufacturer immediately.

b) Determine the Installation Site and Installation Mode

According to the actual situations, choose reader installation site and determine reader antenna polarized direction.

Control column diameter within 50-55 mm, and following the below column installation mode.

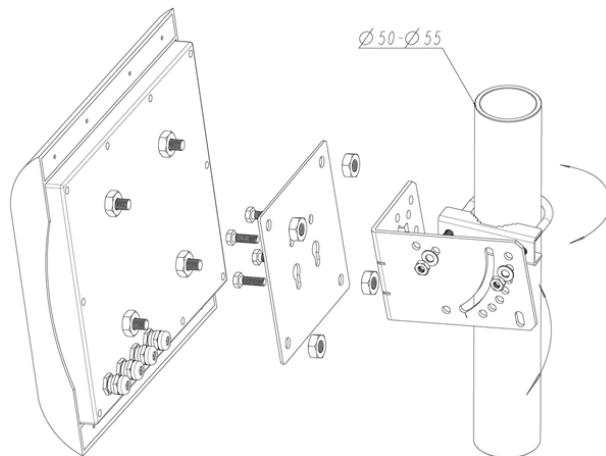


Figure 4: Column Installation Mode

c) Installation Step

Step 1: Open the Back Cover

Place reader face down on the smooth neat desktop or other mesa.

Note: Because reader's cover is ABS materials, the cover is easily scratched by rough objects. In order to prevent the cover not to be damaged, open the device after laying on the table plate or a layer of velvety foam.

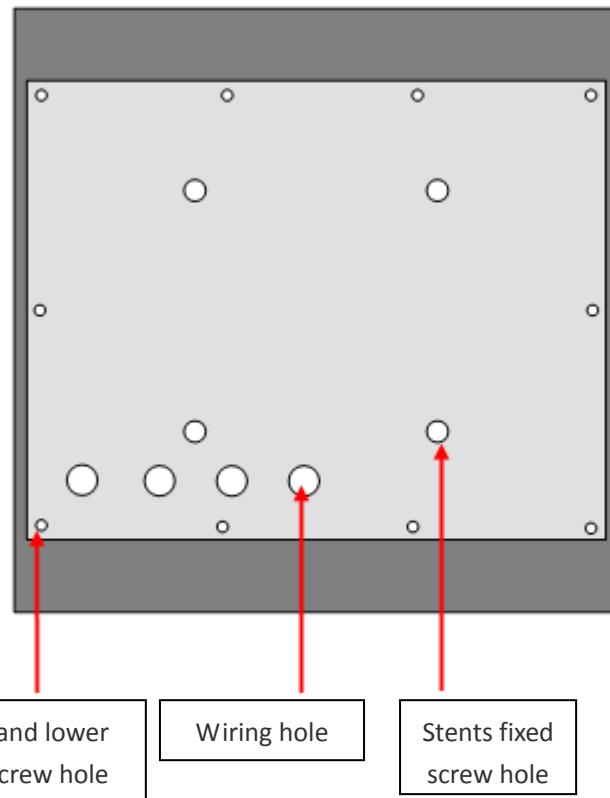


Figure 5: Screw hole on the back of reader diagram

Use screwdrivers remove 10 screws around the back cover, and then gently outward metal cover in case of pull off data line between upper and back cover.

Step 2: Connect Signal Line

Connect the two signal lines 485B- and 485A + of reader corresponding to 485B- and 485A + of smart terminal. Double check the signals is connected correct, is properly connected, then assemble upper and bottom cover, and then fixed to the mounting brackets.

iv. Tag Notes on Using

1. Try to make tag naked in the air, It would be better if tag is wearing on the chest. If the tag must be placed in the bag or pocket, as far as possible be placed in the outermost, so that the signal is easy to penetrate.
2. Tag cannot be placed on the metal items, such as metal pencil case, metal biscuit barrels, because signals are blocked.
3. Tag cannot be placed in water for a long time.
4. Tag should avoid free fall more than 2 meters.
5. Tag belongs to plastic products, there is no resistance to high temperatures and corrosion.

v. Common problems and treatment methods

Problems	Causes	Solutions
Not to read tag	1、 Signal line is obstructed 2、 Power port contact undesirable 3、 Insufficient voltage	1、 check each power line on the circuit or for. Such as access, test pressure drop. 2、 attendance machine, check whether the power connector is loose, if indicator does not light 3、 Measure the voltage values between VCC and GND, 9~12V is normal, if not properly, check Pressure Drop and replace the power supply or signal lines.
	Poor contact between the antenna panel and main-control panel	Tighten J100 port one main-control panel
	Indicator does not light and main-control panel is damaged	Replace the main-control panel
Read tag, but not to upload data	Single lines connect undesirable	Make 485 signal line re-stripping and re-connect
	Single line AB reversed	Exchange 485A + with 485B-
	Attendance Machine not connect to the terminal device	Supply power to Terminals and Attendance machine at the same time, until it can check 2 Attendance machines on the Terminal device.
	Signal lines termination resistors do not match	Disconnect J201 on one of the Attendance Machine
1X data is not returned to the Terminal, and The Terminal will restart	The Terminal is damage	Replace the Terminal
Do not generate attendance record	An attendance machine overleap read	Make tag be close read, to confirm attendance machine to work properly, then adjust the sensitivity of Attendance Machine
	Attendance machine signal interference lead to appear A-B-A or B-A-B state	1、 Find a more suitable installation site. 2、 Adjust the sensitivity of Attendance Machine
The Terminal fake crash, and not working	The Terminal will self-test and it will not affect using	

FCC warning statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.