



Smart School

School Attendance solution

[SHENZHEN MARKTRACE CO., LTD]

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1. Product brief introduction

1.1 Product pictures

This terminal has nice appearance, strong explosion protection and stable performance, easy to operate and maintenance.

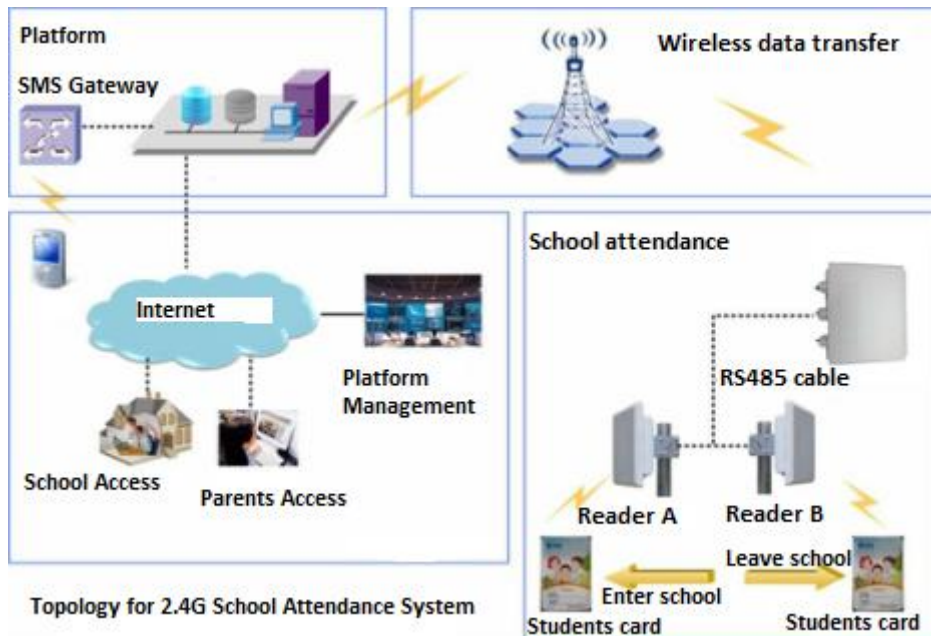


Reader



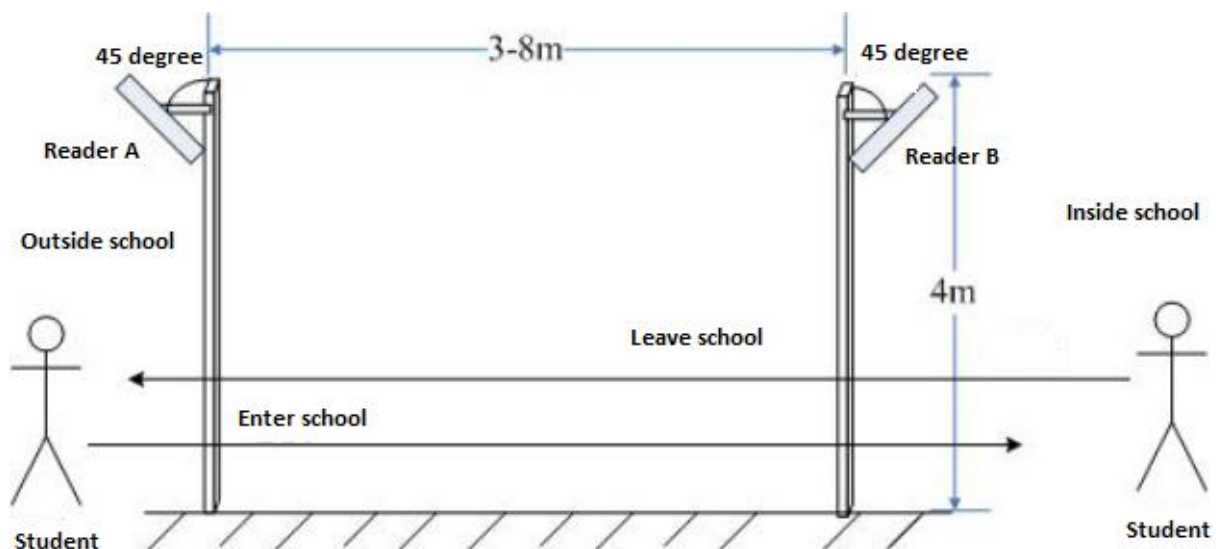
Attendance data terminal

1.2 System topology



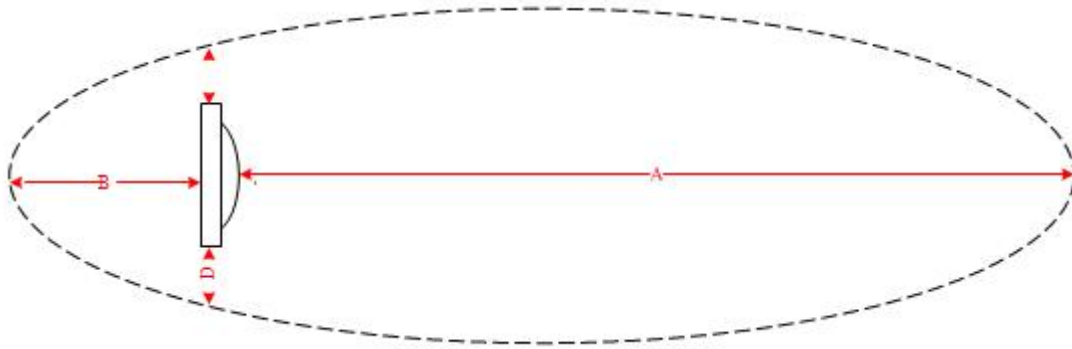
2. Working theory

In general, 2 sets 2.4G readers are necessary to identify the students' attendance in/out school. As picture shown below, 2 readers are marked as A and B, A installs on the school gate and B installs on the main passageway in school. If student hang on the tag and pass A and B one after another, the result is entering school. If student pass B and A one after another, the result is leaving school. The system uses the precision algorithm to analyze the mixed data in reader A and B to ensure the accuracy of the judgment.



3. Reading range

The identification scope of reader is elliptical shape, when you adjust the sensitivity to the maximum and without obstacle, the reading range is 12 to 18m behind, 60-100m in front, 5m in both left and right, as picture shown below. The ideal height of the reader is more than 4m with 45 degrees, distance between reader A and B is 5 to 8m, please note the isolation on the side reading area to prevent reading interference on overlap range.



B=12 to 18m, A=60 to 100m, C/D=5m

Marktrace[®]
RFID 2.4G Attendance Device

MR7901 Bluetooth Data Terminal
Specification
(V1.0)

SHENZHEN MARKTRACE CO., LTD

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1. Product Introduction

1.1 Feature

- Embedded low power consumption product
- Special concise IoT protocol stack
- Supports GPRS and Ethernet transmission
- Supports Bluetooth configuration
- Four 485 interface
- Integrated RFID reader inside(Customized)
- Outdoor using

1.2 Product description

MR7901 Bluetooth data terminal is a data gateway specialized for IoT. It has four 485 interface, used for collecting IoT sensing data, send the data to Cloud platform via TCP protocol after filtering and processing in advance according to the rule.

1.3 Appearance



1.4 Application

- Smart traffic
- Smart city
- School attendance system

2. Brief Introduction of functions

2.1 Data collection

MR7901 has four 485 interface and can connect with 4 sensing collecting devices. The connecting protocol is processed according to Marktrace RS485 communication protocol. For customized MR7901, it can built-in a RFID reader to achieve collection and transmission together.

2.2 Data process

After data collecting, the terminal will filter the data. Generally speaking, it will not store the repeat data during a period time. The filtered data will stored according to the FIFO queue storage mode, data will not lose if power down happened.

2.3 Data transmission

MR7901 will send the stored data via GPRS or wired network, the transmission time depends on two conditions, one is the number of data threshold meets request, the other is the time interval is enough. Data transmission is reliability communication that adapted 'Shenzhen Marktrace IoT platform accessing protocol'.

2.4 Device management

MR7901 can be managed via remote control and local management, the content include firmware upgraded, parameter configuration and etc. Remote control will issue the firmware and parameter via server, local management can achieve it via Bluetooth.

3. Technical Parameters

3.1 Limit parameters

| Project | Parameters |
|---------------------|------------|
| Work temperature | -20~60℃ |
| Work humidity | 10%~80% |
| Storage temperature | -40~80℃ |
| Storage humidity | 5%~95% |

| | |
|--------------|---------|
| Power supply | Max 15V |
|--------------|---------|

3.2 Physical parameters

| Project | Parameters |
|--------------------------|--------------|
| Dimension | 157*162*42mm |
| Weight | 500g |
| Material of bottom shell | PP |
| IP grade | IP65 |
| Anti-UV | Good |

3.3 Power supply features

| Project | Parameters |
|---------------------------|------------|
| Power supply | 9-12V |
| Quiescent Current | 200mA |
| Transient maximum current | 1A |

3.4 Communication interface parameter

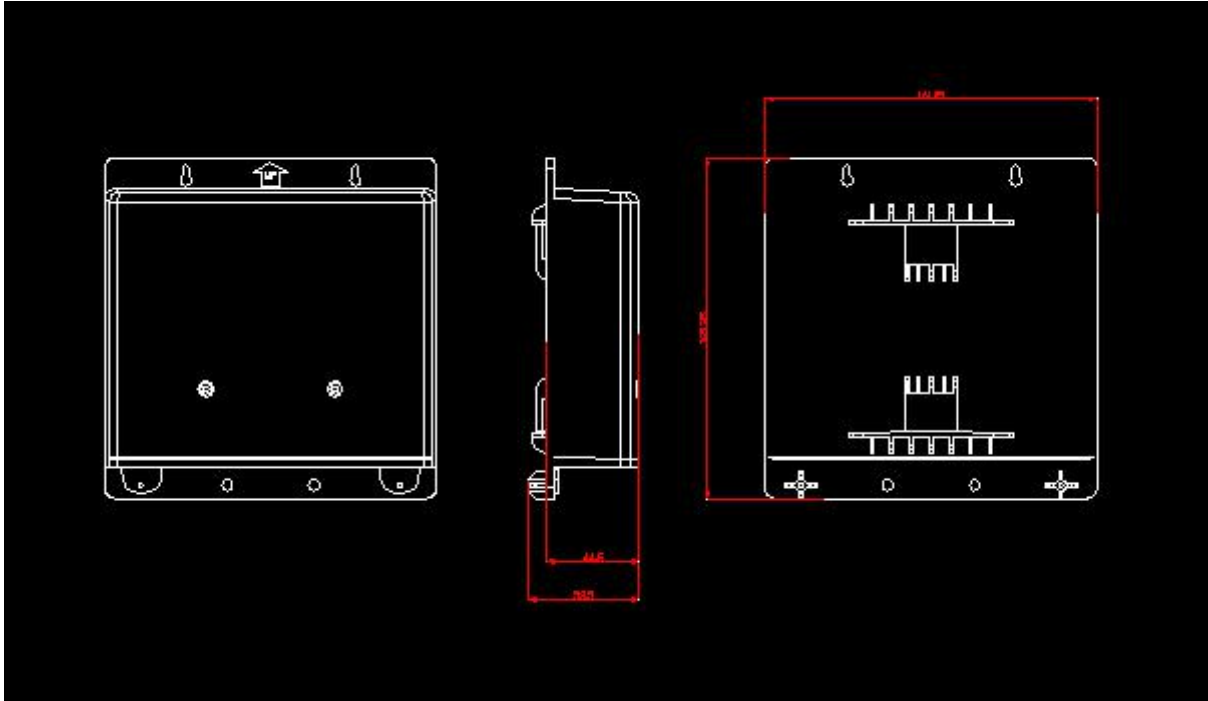
| Project | Parameters |
|--------------------|-----------------|
| GPRS network stand | 2G GSM |
| Ethernet | 100M |
| RS485interface | Baud rate 19200 |
| Bluetooth | BLE4.0 |

3.5 RFID Parameters (Optional)

| Project | Parameters |
|--------------|--------------------------------------|
| Frequency | 2.44GHz |
| Sensitive | -90dBm |
| Protocol | Marktrace 2.4G RFID |
| Complicating | Processing 200 data at the same time |

4. Structure Dimension

Three-view drawing



5. Package

5 terminals (MR7901) placed in one standard box.

Specification

Product name: 2.4G attendance reader (Integrated & unidirectional)

Model no.: HX401

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1. Product feature

- Sensitivity is 27 (adjustable)
- Max reading range of 2.4G is 80m (outdoors)
- Supports RS232, Ethernet and other interface

Picture



2. Physical parameters

| | |
|-----------|---------------------------|
| Model no. | XH401 |
| Material | Aluminum alloy, PVC, blue |
| Dimension | 315*195*68mm |
| Weight | 1700g |
| IP grade | Outdoors suspension |

3. 2.4G RF features

| | |
|---------------------------|---------|
| Modulation | GFSK |
| Communication rate | 1Mbit/s |
| Working frequency | 2440MHz |
| Max receiving sensitivity | -85dbm |
| Antenna Gain | <16dbi |

4. Communication interface

| | |
|----------|---|
| RS232 | Baud rate: 115200bps; Data bit: 8; Stop bit: 1; Parity bit: N |
| RS485 | Baud rate: 19200bps; Data bit: 8; Stop bit: 1; Parity bit: N |
| Ethernet | 10/100Madaptive; server mode |

5. Electrical features

| | |
|-----------------------|--------|
| Work electric current | <300mA |
| Power | <3W |
| Rated power | 9V |

Specification

Product name: 2.4G active card (dual frequency students ID)

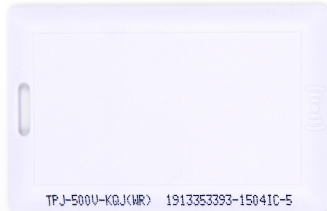
Model no.: MR3850T

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1. Product features

- Ultra-low power consumption, battery life is 3 years
- 2.4G valid reading range reach to 80m (depends on the reader and antenna)
- 13.56MHz valid reading range reach to 3cm

Picture



2. Physical features

| | |
|-----------|---|
| Mode no. | MR3850T |
| Material | ABS, High temperature resistance, white |
| Dimension | 86.3*54*4.0mm |
| Weight | 20g |
| IP grade | IP54 |

3. 2.4G RF features

| | |
|--------------------|---------|
| Modulation | GFSK |
| Communication rate | 1Mbit/s |
| Work frequency | 2440MHz |
| RF output power | 0dbm |

4. 13.56M RF features

| | |
|--------------------|-----------|
| Storage | 8Kbit |
| Protocol standard | ISO14443A |
| Communication rate | 106kbit/s |

5. Electrical features

| | |
|------------------|-----------|
| Average current | <10uA |
| Battery model | CR2025 |
| Battery capacity | 170mA x 2 |
| Battery life | 3 years |