2MWT-i24Z

Indoor 24 Zone Walk-through Metal Detector Gate

User Manual

Manual Version: 2025-10

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1. User Manual – Important Safety & Installation Information

Before installing or operating this Walk-Through Metal Detector (WTMD), please read this manual thoroughly. It provides essential information about the unit's structure, installation requirements, operating procedures, and safety precautions. Proper installation, operation, and maintenance are necessary to ensure reliable performance.

This WTMD is a multi-zone metal detection system consisting of an electronic control unit and two detector panels.

- The electronic control unit contains the magnetic field generator, receivers, signal processor, and controller.
- Each detector panel includes pre-installed transmitting and receiving antennas.
- These components are connected by two cables running from the control unit to the detector panels.

The exterior structure consists of two door panels and a main control box.

- One door panel includes a power connector at the bottom.
- LED light bars are installed vertically inside each door panel.
- The main control box houses the electronic control unit and connects the two door panels to form the detection arch.

1.1 Key Definitions

Sensitivity

Indicates how small a metal object must be to trigger an alarm. Higher sensitivity allows detection of smaller objects.

Discrimination

The gate's ability to distinguish between weapon-related metals and harmless metallic items. Discrimination quality affects the alarm rate and is influenced by sensitivity settings, passenger size, environment, and temperature.

Useless Alarm

An alarm triggered by harmless metal objects.

False Alarm

An alarm not caused by metal (e.g., electromagnetic interference). Alarms caused by actual metal—harmful or harmless—are not considered false alarms.

Alarm Rate

$$\text{Alarm Rate} = \frac{\text{Number of metal-related alarms}}{\text{Number of passengers}} \times 100\%$$

Higher discrimination quality reduces unnecessary alarms.

Pass Rate

The maximum number of people who can pass through the WTMD in a given time. Practical pass rate may be lower due to walking speed and security procedures.

Speed Response

The WTMD's ability to maintain consistent sensitivity regardless of a passenger's walking speed

Calibration

Adjusting the WTMD parameters at the installation site to achieve optimal performance.

Side-by-Side Use

When two or more WTMDs operate close together, their magnetic fields may interfere. Selecting different operating frequencies minimizes interference.

Operating Frequency

The electromagnetic frequency used by the WTMD. During installation, select a frequency with the lowest environmental interference.

1.2 Installation, Operation & Safety Precautions

Please read these guidelines carefully before installation. The supplier is not responsible for damage caused by failure to follow these instructions.

General Requirements

- Read and keep this manual for future reference.
- Installation and setup must be performed by trained professionals.
- The user is responsible for proper sensitivity settings and commissioning, under professional supervision.

When to Request Assistance

Stop using the WTMD and contact the supplier if any of the following occur:

- Visual indicators or display lights malfunction.
- The WTMD is not operating normally.
- The unit has been stored improperly for a long period.
- The unit was subjected to impact or high pressure during transport.
- Any liquid has entered the WTMD.

Installation Guidelines

- Choose a stable, dry, dust-free, and vibration-free location.
- Avoid installing near heat sources, high humidity, or extreme temperatures.
- Keep distance from devices that generate electromagnetic interference (motors, transformers, etc.).
- Ensure enough space around the unit during installation to avoid injury.
- For best performance, secure the WTMD to the ground.

Electrical Safety

- Verify the power supply voltage matches the rating on the WTMD before connecting.
- Ensure all power connections are secure and protected.
- The power line must include a switch or safety device for emergency power cut-off.
- If using an external autotransformer, ensure it is grounded correctly.
- Do not disconnect grounding at any time.
- Always unplug by holding the plug, not the cable.
- The included power adapter is not waterproof—keep it dry and ventilated.

Fire & Explosion Safety

- Do not install in areas with flammable or explosive materials.
- In case of fire, do not use water or foam on an energized WTMD.
- Disconnect power during thunderstorms.

Maintenance Safety

- Disconnect power before cleaning, servicing, or moving the unit.
- Use a soft, damp cloth only—no cleaning chemicals.

- Only qualified engineers should perform internal maintenance.
- Use only manufacturer-approved replacement parts.
- Avoid performing maintenance with power on. If necessary, only trained personnel should do so.

MARKS

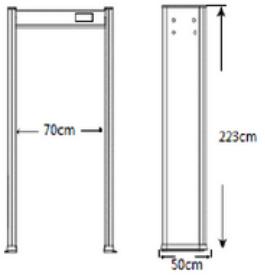
Only qualified professional engineers are permitted to service or maintain any components identified with the following safety marks.

Before opening the package, please read the following instructions carefully. Failure to follow the specified installation procedures may result in issues for which the supplier cannot be held responsible.

1.3 Electronic Control Unit

1. Sticker
2. LCD menu
3. Keyboards
4. Connector to door panel

1.4 Door Panels



- Constructed with specialized synthetic materials.
- Equipped with specially designed transmitting and receiving coils to ensure uniform magnetic field distribution and high detection sensitivity.

1.5 Power Adapter

- Input Voltage: AC 100–240V
- Output Voltage: 15V DC, 3A
- Adapter Dimensions (L × W × H): 114 × 50 × 30 mm
- Cable Length: 2.5 meters
- Weight: 0.5 kg

2. Installation

2.1 Installation Precautions

2.1.1 Selecting the Installation Location

To ensure optimal performance of the Walk-Through Metal Detector (WTMD), it is important to minimize environmental factors that may negatively affect operation.

- **Distance from large stationary metal objects:**

Keep all fixed metal structures at least 30 cm away from the WTMD. While sensitivity is generally unaffected at this distance, the detector may become more susceptible to vibration. More distance is recommended when possible.

- **Stable and level ground:**

Install the WTMD on a flat, stable surface to prevent vibration. Unstable metal items beneath or around the unit may trigger unnecessary alarms as people pass through.

- **Distance from moving metal objects:**

Maintain a clearance of 0.5 m to 2 m from objects that move and contain metal. The required distance depends on the size of the object and helps prevent false alarms.

- **Distance from electronic interference sources:**

Keep the WTMD 0.5 m to 4 m away from devices that generate electromagnetic interference. The ideal distance depends on the installation environment. Adjust the position of the WTMD or the interference source until optimal performance is achieved.

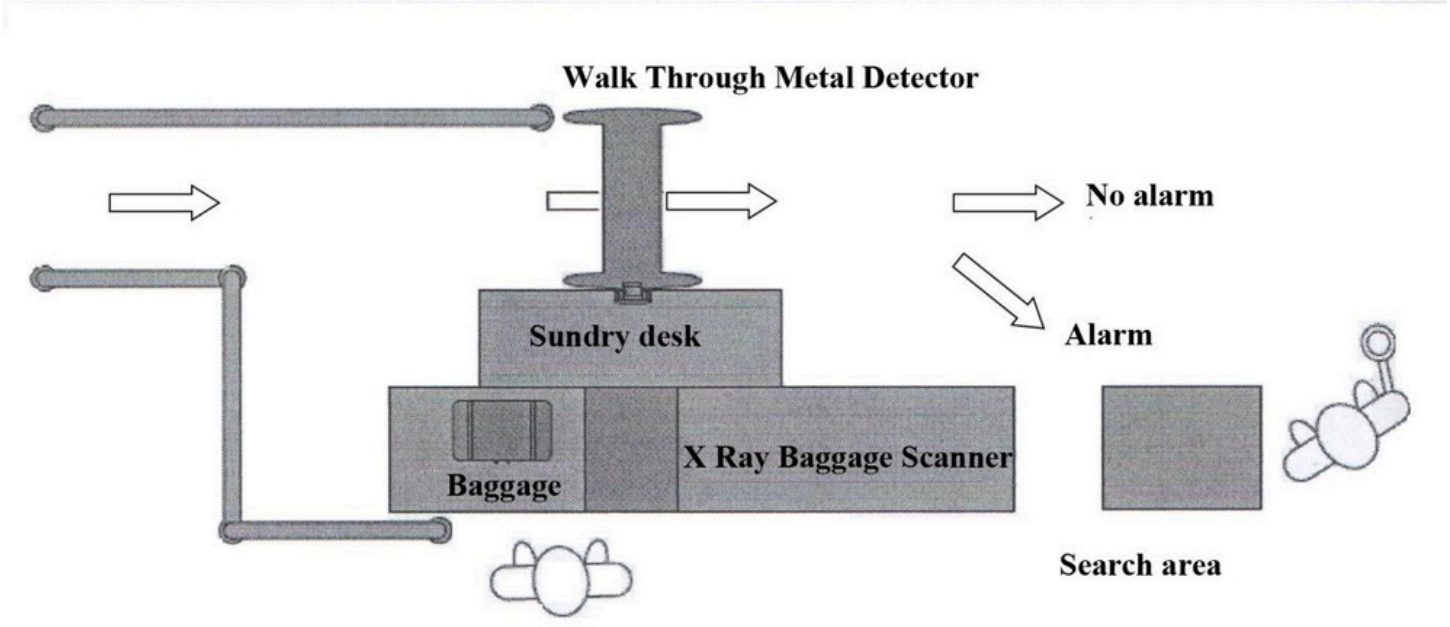
Examples of interference sources include:

- Control panels
- Radios and computers
- Displays and monitors
- High-power motors and transformers
- Electrical wiring
- Silicon-controlled circuits
- Flashing fluorescent lamps
- Welding equipment

- **Power supply considerations:**

Connect the WTMD to an electrical circuit that is not shared with high-power equipment (e.g., heavy motors) to avoid power fluctuations or interference.

2.1.2 Checkpoint Design



To ensure smooth traffic flow and optimal screening performance, the checkpoint should be properly designed before installation. In addition to addressing mechanical and electronic interference (see Section 2.1.1), the efficiency of the security checkpoint depends greatly on how the screening process is organized.

The following factors significantly influence checkpoint performance:

- Maintain an orderly queue. Ensure passengers line up properly and pass through the WTMD one at a time.
- Conduct secondary screening in a separate area. Passengers who trigger the alarm should be guided to a designated space away from the WTMD to prevent interference with ongoing detections.
- Inspect bags using an X-ray machine or manual search. Passengers should not carry bags or large metal objects through the WTMD.
- If bag inspection is not required, provide lockers or a designated storage location where passengers can place their belongings before screening.

2.2 Installing Multiple WTMDs Side by Side

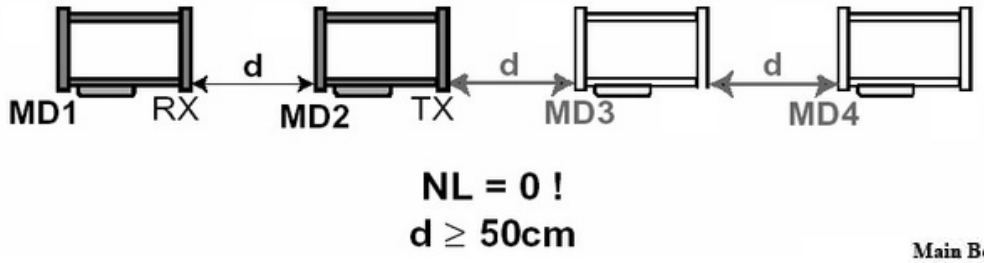
When installing more than one WTMD in close proximity, follow these guidelines to ensure proper operation and avoid interference:

- **Channel Selection:**

If two or more WTMDs are installed within 10 meters of each other, assign a different operating channel to each device to prevent electromagnetic interference.

- **Minimum Distance Between Units:**

Maintain a minimum distance of 0.5 meters between each WTMD. The exact spacing may vary depending on the sensitivity setting—higher sensitivity requires greater distance between units.
Note: WTMD stands for Walk-Through Metal Detector.



2.3 Assembly Instructions

- **Unpacking:**

Carefully remove all parts from the package. Keep all tools (screws, wrenches, etc.) organized for assembly.

- **Select Installation Location:**

Choose a location that meets the guidelines in Section 2.1.1 to minimize interference and ensure stable operation.

- **Secure Components:**

Ensure all components are firmly fixed. When standing the WTMD upright:

  - Verify that both door panels are vertical to the ground.
  - Check that the top and bottom distances of each door panel are equal.

- **Stable Operation:**

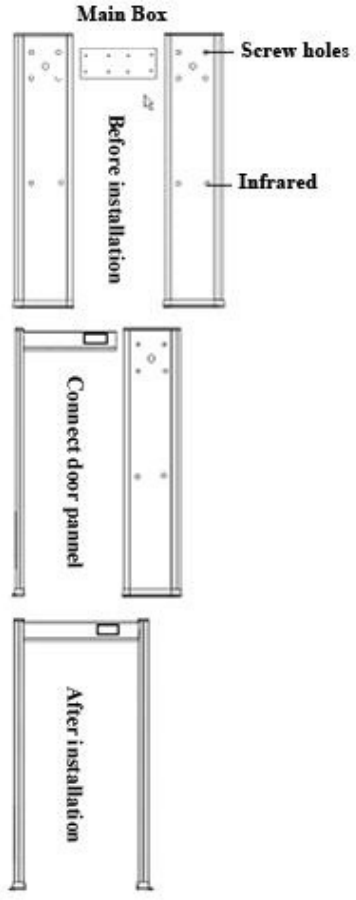
Make sure the WTMD is operating in a stable environment with no large metal objects moving or vibrating nearby.

- **Prohibited Actions:**

Do not drill holes or screw into the door panels.

- **Power Connection:**

Before powering on, ensure that the local power supply voltage matches the WTMD input voltage.



Warning:

- Connecting to an incorrect power supply may damage the WTMD.
- Keep moving metal objects at least 70 cm away from the WTMD.
- Keep power cables at least 50 cm away from the WTMD to prevent interference.

Installation Steps

- **Attach Door Panels:**

Connect each door panel to the main control box using the provided screws. Use the special wrench included in the package to securely tighten all screws.

- **Connect Cables:**

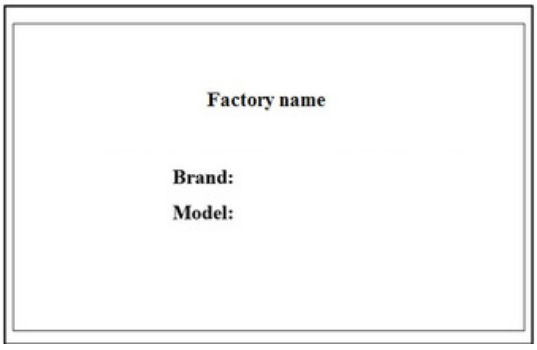
Connect the two cables from the electronic control unit to the corresponding door panels.

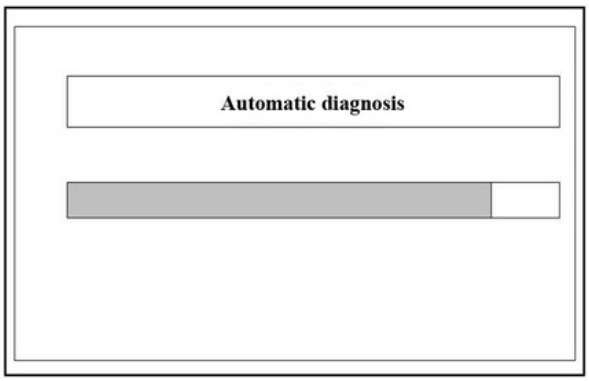
  - The cables appear identical, so be careful: left cable → left door panel, right cable → right door panel.

3. Power-On, Display, and Procedure Settings

3.1 Power On the WTMD

1. Locate the power interface as shown in the attached diagrams.
2. Turn on the power supply. Upon powering up, the WTMD will emit a brief alarm sound for a few seconds.
3. The LCD screen will display the initial boot sequence and system information.

Operation	Introduction
	Power plug
	1. Factory name 2. Brand 3. Model number



- Start Automatic Diagnosis

Initiate the WTMD's built-in diagnostic routine.

- System Check

The WTMD will perform a complete self-diagnosis to ensure all components are functioning correctly.

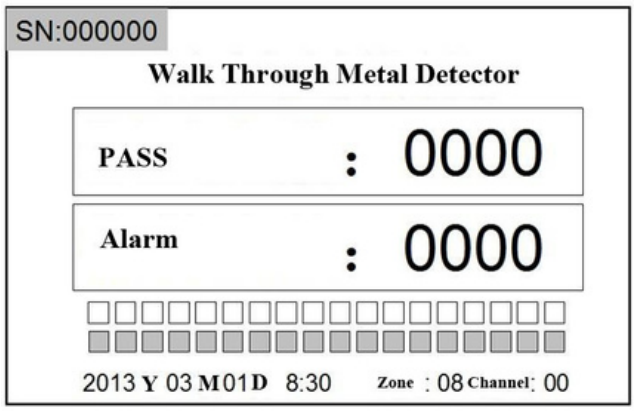
- Environmental Scan

The system scans the current environment for potential interference and other factors that could affect performance.

- Automatic Calibration

The WTMD automatically calibrates its settings to adapt to the detected environmental conditions, ensuring optimal detection sensitivity and stability.

- ESC: Return to the previous menu or exit the current program/settings interface.
- ▲ (Up/Increase): Navigate to the next feature or increase the selected parameter.
- ▼ (Down/Decrease): Navigate to the previous feature or decrease the selected parameter.
- ENTER: Save the current data or enter the next interface.
- POWER: Turn the WTMD on or off.

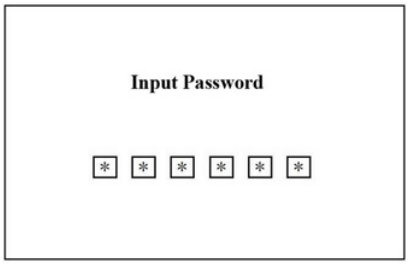


Normal Operating Status Information

The WTMD displays the following information during normal operation:

- Serial Number: e.g., SN: 000000
- Number of Passengers: Total passengers who have passed through
- Number of Alarms: Total alarms triggered
- Date and Time
- Number of Detection Zones
- Current Operating Channel

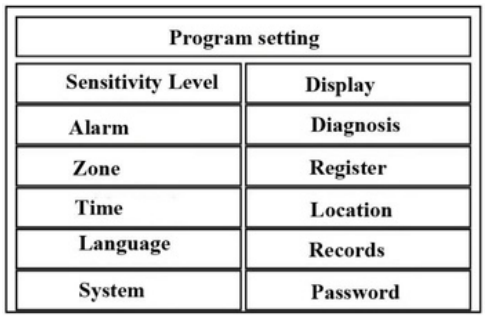
Note: Press and hold the ESC key to clear the current operational information



Password Entry for Programming

Before accessing the programming interface, enter the password.

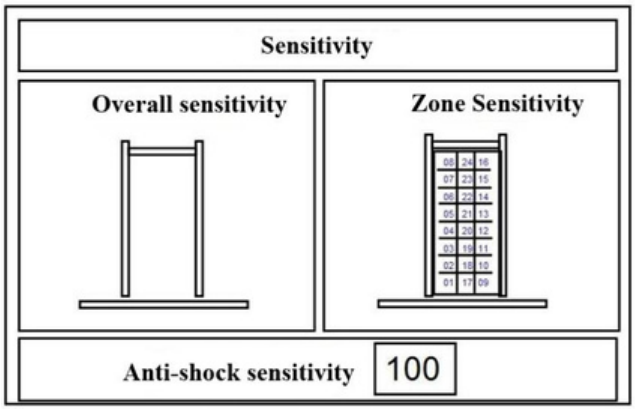
- Default Password: 100000



Programming the WTMD

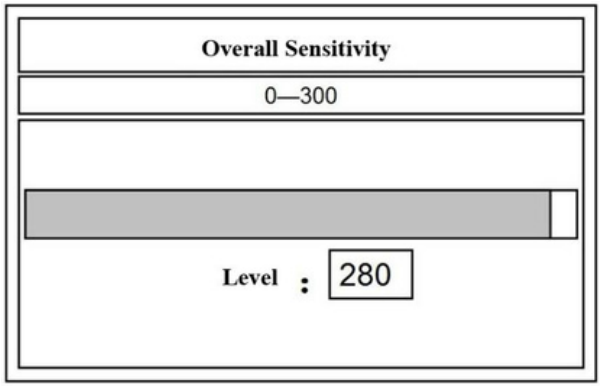
To navigate and program the WTMD:

1. Press ENTER to select a menu option.
2. Use ▲ (Up) or ▼ (Down) to move between options or adjust parameters.
3. Press ENTER again to enter the next menu or confirm the selection.



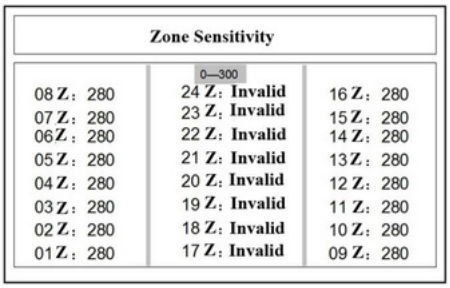
Sensitivity Settings

1. Overall Sensitivity:
2. Adjusting the overall sensitivity level will simultaneously change the sensitivity for all detection zones.
3. Zone Sensitivity:
4. Adjust the sensitivity of individual zones independently to fine-tune detection performance.



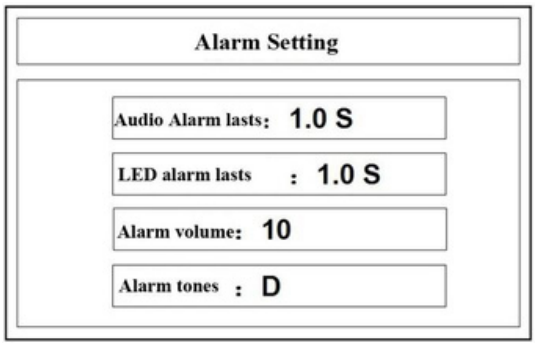
Overall Sensitivity

1. Adjusting the overall sensitivity level will change the sensitivity of all detection zones simultaneously.
2. The sensitivity level ranges from 1 to 300. A higher number indicates higher sensitivity.
3. The progress bar displays the current sensitivity parameter visually.
4. Press ENTER to save the selected sensitivity level.



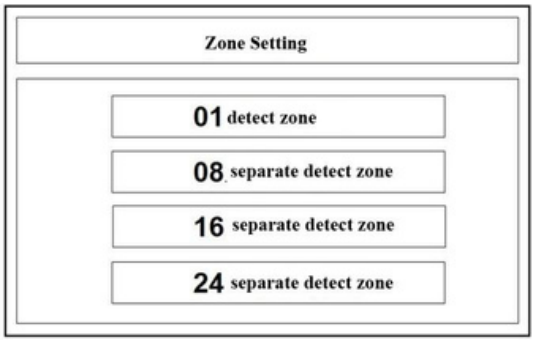
Zone Sensitivity

1. Adjust the sensitivity of each detection zone independently.
2. The sensitivity level ranges from 1 to 300. A higher number corresponds to higher sensitivity.



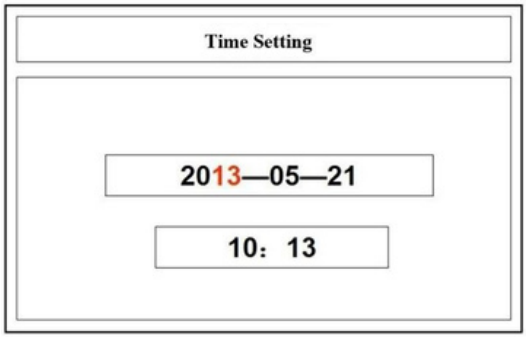
Alarm Settings

1. Audio Alarm Duration: Set the length of the audio alarm from 1 to 9 seconds.
2. LED Alarm Duration: Set the length of the LED light alarm from 1 to 9 seconds.
3. Alarm Volume: Adjustable from level 1 to 20.
4. Alarm Tones: Choose from 16 different tones (1 to F).



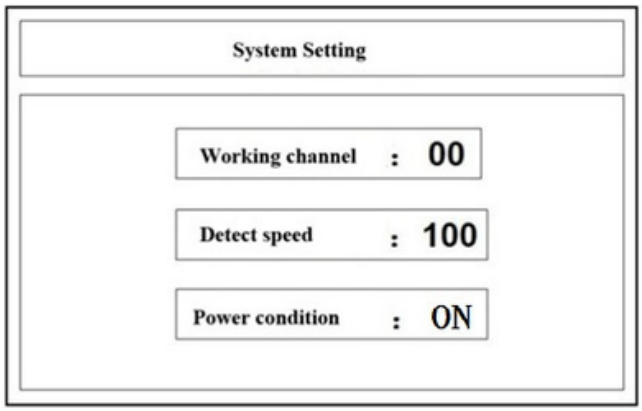
Zone Settings

1. Set the number of detection zones. (Note: Different models may offer different numbers of zones.)
2. Press ENTER to select the option.
3. Use ▲ (Up) or ▼ (Down) to adjust the value.
4. Press ENTER again to save the setting.



Date and Time Settings

1. Set the WTMD to the correct date and time. Incorrect settings may affect system operation.
2. Press ENTER to select the field.
3. Use ▲ (Up) or ▼ (Down) to adjust the value.
4. Press ENTER to save the setting.



System Settings

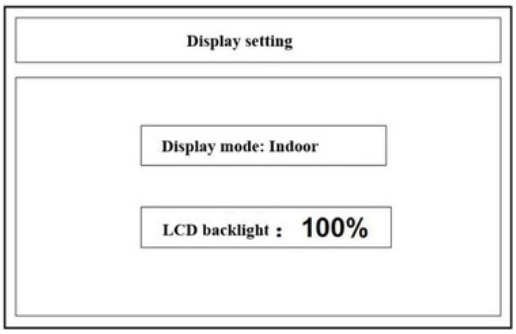
- Working Channel:

Choose from 100 available channels to minimize interference when multiple WTMDs are installed side by side.

- Detection Speed:

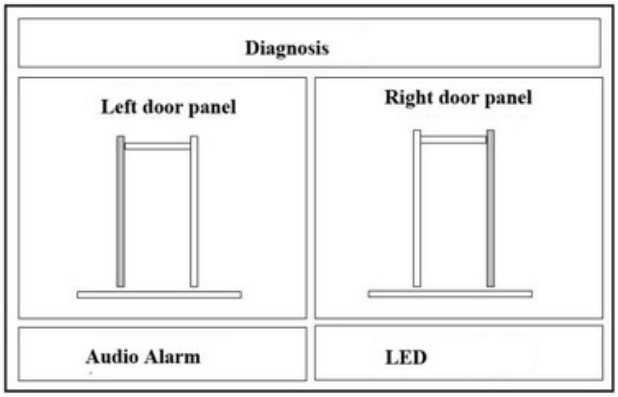
Set the maximum detection speed from 1 to 100 persons per minute.

- Power Condition:
  - ON: WTMD will automatically start and boot when power is applied.
  - OFF: WTMD will remain in standby when powered on and requires pressing the POWER button to start.



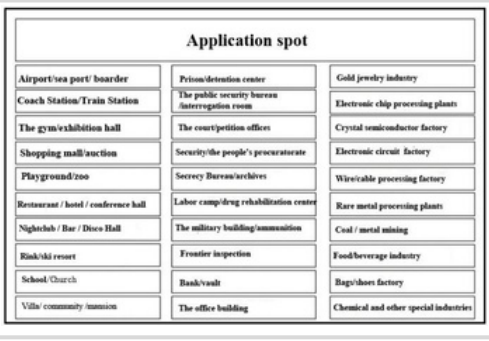
Display Settings

- Display Mode: Select either Indoor or Outdoor mode.
- LCD Brightness: Adjust from 1% to 100%.
- Press ENTER to select the setting.
- Use ▲ (Up) or ▼ (Down) to adjust the value.
- Press ENTER to save the setting.



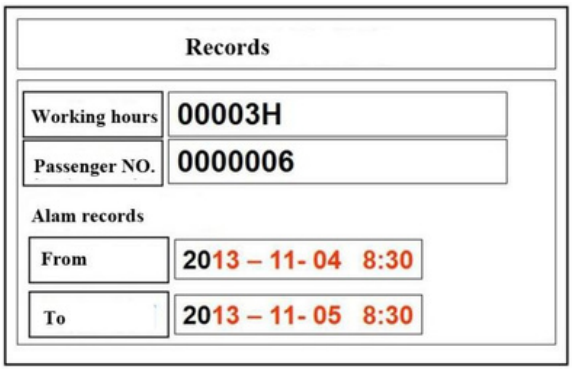
Problem Diagnosis

1. Left/Right Door Panel:
2. Select a door panel to run diagnostics. If an issue is detected, the system will display the corresponding error code.
3. Audio Alarm:
4. Select this option to test the audio alarm. The alarm will sound for verification purposes.
5. LED Alarm:
6. Select this option to test the LED alarm lights. The lights will activate for verification purposes.



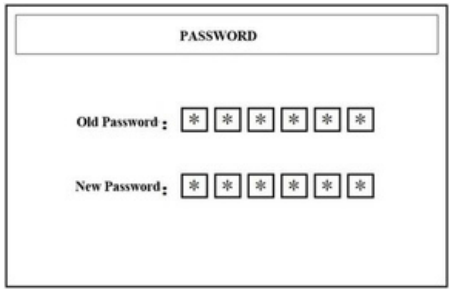
Application Spot Settings

The WTMD offers 33 different application spots. Users can select the appropriate spot for their environment and then adjust the sensitivity to achieve the optimal detection performance.



Records

1. View alarm records, system working hours, and total number of passengers.
2. Enter the start and end time to search for specific records.
3. Press ENTER to select a field.
4. Use ▲ (Up) or ▼ (Down) to navigate or adjust values.
5. Press ENTER to save or confirm the selection.



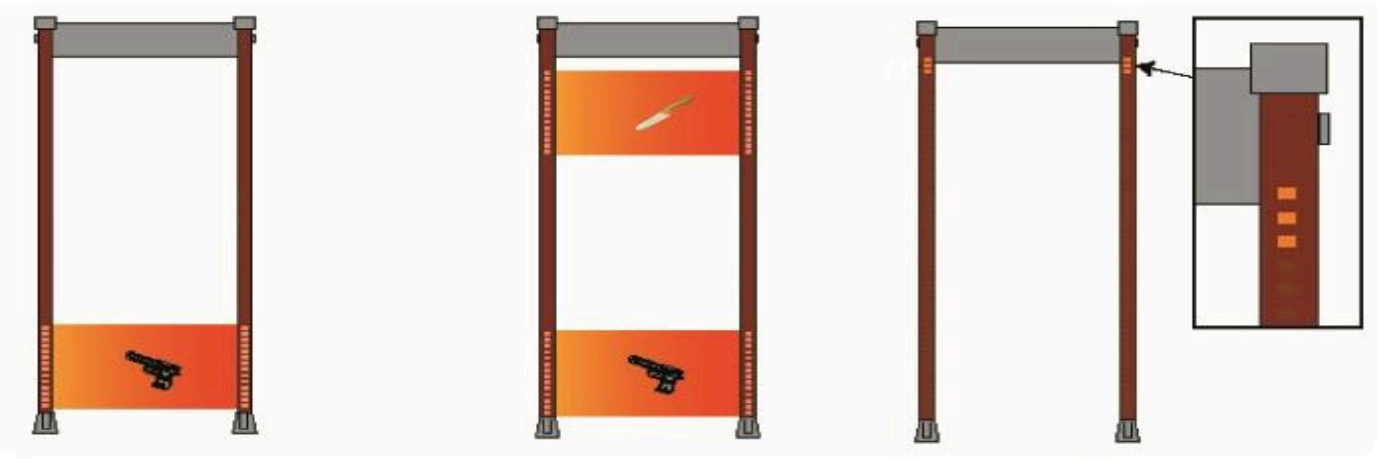
Password Settings

1. Select the option to change the password.
2. Press ENTER to confirm selection.
3. Use ▲ (Up) or ▼ (Down) to choose numbers.
4. Press ENTER to save the new password.

3.3 Multi-Zone Display

The WTMD features multi-zone LED indicators to pinpoint the location of metal objects at the corresponding height.

- When an alarm is triggered, one or more sets of LED lights will illuminate, showing the position of the detected metal.
- When no alarm is active, the two power indicator lights at the top of each door panel will continue to flash, indicating normal operation.



Alarm for single metal threat

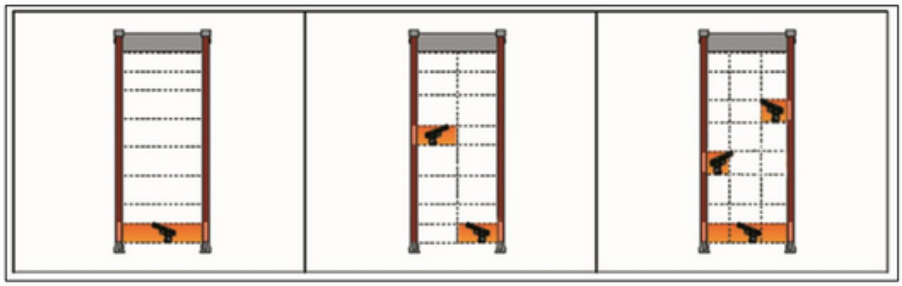
Alarm for 2 metal threat

Power indicator lights

Alarm Zone Options

The WTMD offers four alarm zone configurations: Single Zone, 8 Zones, 16 Zones, 24 Zones

Users can select the desired configuration in the Zone Setting menu. The sensitivity of each zone can also be adjusted independently to optimize detection performance.



LED alarm for 8 Zone setting	LED alarm for 16 Zone setting	LED alarm for 24 Zone setting

3.4 Power Saving and Standby Mode

- The WTMD will automatically enter Power Saving Mode if no activity is detected for 5 minutes.
- Once a passenger passes through, the WTMD will automatically return to normal operating mode.

4. Maintenance and Service

4.1 Maintenance & After-Sales Service

The WTMD is a high-tech electronic device. Operators should:

- Understand its technical performance, structural principles, and operating procedures.
- Be proficient in performing routine maintenance to ensure efficient operation, extended device life, and safety.

4.2 Routine Maintenance

To maintain optimal performance, the WTMD should be regularly inspected and adjusted by qualified personnel.
Important: Always disconnect power before checking internal hardware.
Daily Maintenance Tasks:

- Install the device in a ventilated, dust-free, dry environment, avoiding high temperature, high humidity, and direct sunlight.
- Remove dust from inside the device.
- Tighten any loose components or wiring connections.
- Inspect for damaged parts; determine the cause, resolve the issue, then replace as needed. Recalibrate sensitivity after replacement.
- Do not leave foreign objects inside the WTMD, as this may cause electrical hazards.

4.3 Maintenance Precautions

- Never leave foreign objects or water inside the WTMD.
- Always disconnect power before inspection. If inspection must be done while powered, ensure the operator is professionally trained and aware of the risks.
- Take precautions to prevent electrostatic damage to sensitive electronic components before repair.
- Verify that all cables are correctly connected before powering on.

4.4 Storage Conditions, Storage Period, and Precautions

- The WTMD should be stored in a clean, dry environment. Excessive heat or moisture may damage internal components.
- If the device will not be used for an extended period, it should remain in its original packaging.

Storage Conditions:

- Temperature: -20°C to +60°C (with no condensation)
- Humidity: 20% to 95%
- Maximum Storage Time: 15 weeks

Long-Term Storage Recommendations:

- Store in a clean, dry, and well-ventilated warehouse.
- Avoid exposure to corrosive gases.
- Maintain relative humidity below 80%.
- Keep the device in its original packaging to ensure protection.

4.5 After-Sales Service

Thank you for choosing our WTMD. We provide one year of complimentary after-sales service.

Note: Service coverage does not apply in the following cases:

- Missing device parts, trademark labels, or serial numbers.
- Damage caused by incorrect operation.
- Damage resulting from force majeure or unavoidable events.
- Damage incurred during transport by unqualified personnel.
- Damage caused by connecting the device to unauthorized products or systems.