metrasens

# Metrasens Ultra User Guide

V7.0 | 2026

# Foreword

The equipment described in this guide is subject to continuous development and improvement. Consequently, there may be minor variations in specifications, facilities or operations that are not covered in this guide. Every effort has been made to ensure that the information provided in this guide is accurate at the time of going to print. If any errors or omissions are noticed, please notify Metrasens Ltd.

The equipment must be operated and maintained only by suitably trained and qualified personnel.

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# Trademarks

All trademarks used in this document are acknowledged as belonging to their respective companies.

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# Patents

Metrasens screening technology used in Metrasens Ultra® is protected by the following patents and patent applications: US 7113092, GB 2395276, ZA 2005/03561, JP 4477503, IL 168467, US 2013-0307533 A1, WO 2013/171498 A2, and Euro Pat App 2 850 462 with other US and international patents pending.

# Warranty

## OVERVIEW

The product is warrantied against defects in materials and workmanship for the period stated in the product terms and conditions of sale.  The start date of any such warranty is the date of invoice. However, if the product is installed by Metrasens (hereby known as The Company), or a Company approved service agent, the warranty will start from the date of the completed installation.

If the product fails within this warranty period, and the product has been used in accordance with this User Guide, The Company will repair or exchange the product at no charge, with a product at least functionally equivalent to the original product.

This warranty also covers any replacement products or parts provided as part of a warranty claim from the date of the replacement or repair for ninety days or for the remaining portion of the original product's warranty, whichever provides longer coverage. In the event of a warranty claim, the Customer is responsible for return shipping costs. The Company is responsible for repair and/or replacement costs and shipping costs back to the Customer.

## EXCLUSIONS

This warranty does not apply:

- If the product has been tampered with in any way, this includes removal or defacement of serial numbers, opening the casing, or any modifications of any sort unless carried out by the Company itself or a Company approved Service agent. If an approved service agent is authorized to carry out any modifications this will be stated in writing by the Company.
- If the product has been damaged in any way, externally or internally. This includes damage caused by accident, water/dust ingress, abuse, misuse and/or misapplication.

## LIMITATIONS

To the maximum extent permitted by law, this warranty and the remedies set forth above are exclusive and in lieu of all other warranties, remedies, and conditions, whether oral or written, express or implied. The Company specifically disclaims any, and all implied warranties, including, without limitation, warranties of merchantability and fitness for a particular purpose. If the Company cannot lawfully disclaim or exclude implied warranties under applicable law, then to the extent possible any claims under such implied warranties shall expire on the expiration of the warranty period.

To the maximum extent permitted by law, The Company is not responsible for direct, special, incidental, or consequential damages resulting from any breach of warranty or condition, or under any other legal theory. For consumers who have the benefit of consumer protection laws or regulations in their country of purchase or, if different, their country of residence, the benefits conferred by this warranty are in addition to all rights and remedies conveyed by such consumer protection laws and regulations. To the extent that liability under such consumer protection laws and regulations may be limited, The Company's liability is limited, at its sole option to replacement with a new or graded product, to a repair of the product or supply of the repair service again. No approved reseller, agent or employee is authorized to make any modification, extension, or addition to this warranty.

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# 1. Safety information

## 1.1 USER GUIDE SIGNAL WORDS

The following signal words are used in this document. All related notes and reminders are highlighted in RED and BLUE, please read carefully:

## 1.2 USER'S SAFETY RULES

To avoid damage to the equipment, as well as avoid the risk of personal injury:

### ALWAYS

- Read all user guides and become fully acquainted with all aspects of using the equipment.
- Follow the recommended cleaning procedures and clean the equipment on a regular basis.
- Ensure only Metrasens-approved replacement parts are used to maintain the equipment as alternatives may result in decreased performance and/or invalidate the warranty.
- Ensure only the AC/DC power adapter supplied by Metrasens, or an alternative adapter authorized by Metrasens is used.
- Use the AC/DC power adapter indoors (when required) in a dry location only.
- Deploy the system on a level floor. To avoid any chance of the system tipping over, install the base unit on a hard, non-porous surface where the suction feet can be effective.

### DO NOT

- Attempt to operate or maintain the equipment if you are unauthorized, unqualified, or unfit to do so.
- Attempt to operate the equipment if it has not been properly installed as specified in the installation guide.
- Use any alternative third-party AC/DC power adapter with the equipment if it is not authorized by Metrasens.
- Use the AC/DC power adapter outdoors - It is for indoor use only.
- Make any modifications to the equipment without the express permission of Metrasens.
- Use the equipment if it is damaged or faulty in any way, or where there is any doubt about its safe operation.
- Attempt to operate the equipment outside of the specified operating parameters.
- Replace the battery unless your authorized Metrasens service or support department has requested that you replace it.
- Use the equipment for any purpose other than as specified in the user guides.
- Attempt to operate the equipment in an environment not specified in this user guide.
- Replace the battery unless your authorized Metrasens service or support department has requested that you replace it.
- Open the sensor unit case. This action could cause the system to malfunction and automatically invalidate the warranty.

– The system is designed to withstand moderate wind conditions; however, in gusting or consistently high winds, its stability may be compromised, leading to a risk of tipping. Do not operate the system outdoors under such conditions to prevent accidents or damage

**⚠ CAUTION**

Do not allow anyone to climb on or lean against any part of the system, including the screener pole or base. Doing so may cause the system to tip over, leading to potential accidents and damage.

Do not leave the system unattended around children. Ensure that children are kept at a safe distance to prevent accidental contact. If the system falls, it may cause injury.

## 1.3 BATTERY SAFETY RULES

**⚠ CAUTION**

The Li-Ion battery provided with this product is for use with the Metrasens Ultra system ONLY.

To avoid damage to the equipment, as well as avoid the risk of personal injury:

### ALWAYS

- Use genuine Metrasens replacement batteries.
- Follow local regulations to dispose of used batteries correctly.

### DO NOT

- Under any circumstances incinerate the battery.
- Under any circumstances dismantle, open, or shred the battery.
- Expose the product containing batteries to excessive heat (for example from storage in direct sunlight, fire or similar).
- Expose the product to extreme low temperature conditions as that may result in overheating and thermal runaway.
- Recharge the battery when the temperature is below 32°F (0°C). If you do this, it may permanently reduce the capacity of the battery.

**⚠ CAUTION**

In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes.

However, if contact has been made, wash the affected area with copious amounts of water and seek medical advice.

# 2. Technical Specifications

## 2.1 HARDWARE

| HARDWARE | |
|---|---|
| Dimensions (W x H x D) | 9.4cm x 180.5cm x 10.6cm.<br>3.7inch x 72inch x 4.7inch. |
| Base unit weight | 11kg (24lb.) nominal. |
| System weight | 10kg (22lb.) nominal. |
| Visual indicators | • 360° viewable green and red alert indicator.<br>• Signal strength - 5 LED levels.<br>• Zone location - 5 LED sets at the height of the detected object. |
| Audible alert indicator | Variable volume and tone. |
| Optical Detection Sensor *(From Serial no. 3325-3310 onward)* | Enables people counting feature. |
| User interface | • 10.92 cm (4.3 inch) color touch screen.<br>• Variable backlight.<br>• PCAP touch technology that allows the operator to wear gloves. |
| Standard mounting | Portable, freestanding floor mount fitted with three rubber suction feet. |
| Mounting options | Wall mount kit (Part number 3162) can be installed as either locked to wall, or removable. |

## 2.2 OPERATING CONDITIONS

| Condition | Specification |
|---|---|
| Temperature Range | Operating range on battery: -5˚F to 120˚F (-20˚C to +60˚C)<br>Charging and DC power operation 32˚F to 104˚F (0˚C to +40˚C).<br>You must only charge the system indoors. |
| Humidity | 95% non-condensing |
| IP Rating | IP65 certified |
| Maximum Altitude | 6,500′ (2,000m) |

## 2.3 ELECTRICAL

| POWER | |
|---|---|
| AC Power | • DC supply provided through inline AC/DC power adapter.<br>• AC supply input - 90 V AC to 250 V AC, 50-60 Hz. DC supply output - 24 VDC rated 2.5 A, 60 W.<br>• DC in socket: 2.1 x 5.5 x 12 mm connector. |
| Power over Ethernet (PoE) | • RJ45 socket supporting PoE 802.3bt standard.<br>• PoE source must be rated to supply up to 20W.<br>• For PoE, Metrasens recommend using Cat 6A cables or above.<br>• RJ45 socket also supports standard Ethernet/Cat 5e. |
| Battery and power | • Internal, rechargeable Li Ion battery within the system.<br>• Nominal voltage: 14.4V. Nominal capacity: 5200mAh.<br>• Energy: 78.96Wh.<br>• Enclosed within equipment as per UN3481, P.I.967 Section II Compliant with FAA transport regulations.<br>• Typical 16.5 hours operation at standard use profile.<br>• Range of power-save options extend operation.<br>• Recharge time from 0% charge to 80% charge = 120 mins.<br>• Recharge time: From 20% charge to 100% charge = 160 mins. |

## 2.4 CONNECTIVITY

| CONNECTIVITY | |
|---|---|
| Network | • Standard Ethernet - RJ45 socket for Cat 5+ cable connection.<br>• PoE - RJ45 socket for Cat 6A cable connection. |
| Dry contact connection (optional) | • The connector is a Switch Craft TA3FLX.<br>• Contact closure occurs across pins 1 and 2.<br>• Maximum rating: 48V AC/DC, 3A. |

| CONNECTIVITY | |
|---|---|
| | • The Alert connection is made for 0.5 seconds, starting at the same time the beacon turns red.<br>• This hold period can be changed through a WebAPI command. |

# 3. Technology Overview

The Metrasens Ultra system screens the area immediately around the system, with the greatest sensitivity within a range of about 90 cm/3ft.

The system can detect objects with large magnetic signatures, such as mobile phones, further away than 90 cm. However, objects with very small magnetic signatures, such as tattoo needles, need to be closer than 90 cm for the system to detect them.

It is important to understand that the signal strength of an object's magnetic signature reduces rapidly in relation to the object range from the system. For example, the same object positioned at twice the original distance from the system gives a signal strength of about 12% of the original position's level. Therefore, screening must occur as close to the system as possible.

For this reason, although the system detects most objects if a subject just walks past the system, the optimum screening procedure to detect small objects is for the subject to rotate 360° just in front of the system.

# 4. The Four Steps To Effective Screening

To screen a subject properly and effectively, follow these four steps:

1. Position and assemble the Metrasens Ultra system in a suitable location.
2. Switch on the system and set the sensor sensitivity, alert alarm volume, alert indicator brightness, and screen brightness levels to match the screening operation and environment.
3. Arrange the location and follow the defined screening procedures.
4. Follow the guidelines about the alert indication and object location.

A series of CONOPS documents is available to cover the deployment and operation of the system in a variety of differing screening situations, please request copies directly from Metrasens.

# 5. Screening People

## 5.1 OPERATIONAL CONSIDERATIONS

When performing either of the screening methods detailed below, consider the following:

- Ensure any screening personnel stands at least 2m/6ft from the system to avoid causing unwanted alerts.
- Screening must only happen when the alert indicator beacon is green to show the system is ready. Therefore, if the beacon is RED wait until it turns GREEN to continue further screening operations.
- The system triggers an alert if it has detected the person passing the system is carrying one or more ferrous objects.

## 5.2 WALK-BY

This method is designed to screen people walking past the system at a normal walking pace.

Where possible, set up the system in a narrow area, such as a doorway or corridor, so the person subject to screening must walk past the system in a single file. Alternatively, artificially create a narrow channel by placing a suitable object, such as a chair, in front of the system to form the channel.

- When performing the screening:
- Maintain at least a 1.2m (4 foot) separation between each person being screened.
- Invite the person to walk past the system at a normal walking pace.



- Ensure the person passes within a channel no wider than 30inches.
- If the alert sounds a BLUE zonal indicator lights up and the indicator beacon shows RED:
    1) Invite the person to remove any metallic objects.
    2) Wait for the indicator beacon to show GREEN.
    3) Invite the person to walk past the system again.
    4) Repeat this step until the system does not alert.

### 5.3 360° TURN

The 360° turn is recommended when there is the need to detect even the smallest threat objects as it guarantees that all sides of a person's body remain at a close distance from the system.



When performing the screening:

- Invite the person to stand directly in front of the system and perform a 360° turn on the spot.
- Make sure the person does not touch the system as that may cause an alert.

If the alert sounds and the indicator beacon shows RED:

- Invite the person to remove all metallic objects.
- Wait for the indicator beacon to show GREEN.
- Invite the person to stand and turn in front of the system again.
- Repeat this step until the system does not alert.

# 6. Screening Personal belongings

### 6.1 WALK-BY WITH PERSONAL BELONGINGS

Follow further steps to screen a person's belongings during a walk-by:

1) Ask the person to carry any personal items requiring screening.

2) Perform the standard walk-by screening procedure.

3) If the alert sounds and the indicator beacon shows RED:

- Find and remove all metallic objects in accordance with your company's policies and procedures.
- Wait for the indicator beacon to show GREEN.
- Invite the person to walk past the system again.
- Repeat this step until the system does not alert.

### 6.2 SCREENING PERSONAL BELONGINGS HORIZONTALLY

This mode is typically used in corrections settings.

Follow these steps to screen a person's belongings in a horizontal mode:

1) Remove the system from the base unit and mount the system horizontally above the floor, using suitable items to securely support each end of the system.

2) Set the height of the system so that people can pass the personal items to be screened below the system, but without touching the system.

3) Invite the person to carefully slide their personal belongings below the system.

4) If the alert sounds and the indicator beacon show RED:

- Find and remove all metallic objects (in accordance with your company's security policy)
- Wait for the indicator beacon to show GREEN.
- Invite the person to slide their personal belongings below the system again.
- Repeat this step until the system does not alert.

### 6.3 OPERATIONAL CONSIDERATIONS

When performing either of the personal belonging screening methods detailed above:

- Ensure any screening personnel stand at least 2m (6 feet) away from the system, to avoid causing unwanted alerts.
- The system sounds an alert if the person passing the system is carrying any ferrous objects.
- Screening must only happen when the indicator beacon is GREEN to show the system is ready. Therefore, if the indicator beacon is RED, wait until it turns green to continue further screening operation

# 7. Placement

### 7.1 CHOOSING A SUITABLE LOCATION

Metrasens Ultra can be used indoors or outdoors, wall-mounted in a static location or used freestanding around your facility.

The system needs to be placed on a level floor. To avoid any chance of the system tipping over, install the base unit on a hard, non-porous surface where the suction feet can be effective.

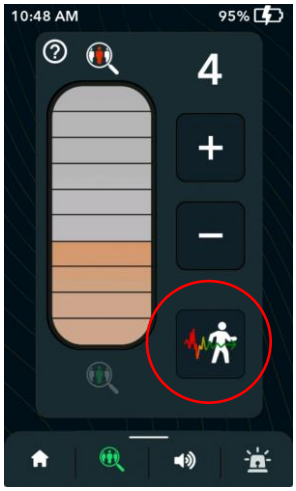
To avoid extraneous alerts, always:

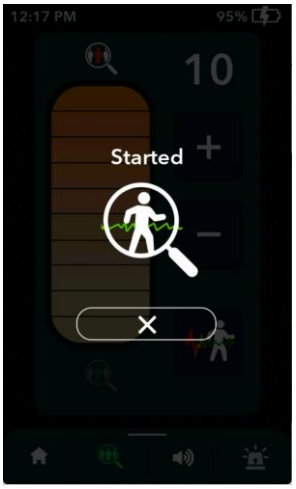
- Ensure the AC/DC power adapter and cables are positioned at least 20 cm (8 inches) from the system.
- Placing the AC/DC power adapter at the rear of the base unit is acceptable but avoid placing it on top or by the side of the base unit.
- Route any PoE cables away from the system.

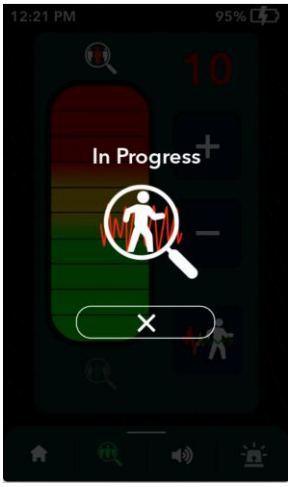
## 7.2 ENVIRO-SCORE

As part of release 4.0, the Metrasens Ultra includes a feature that can assist in choosing a suitable location for your system – Enviro-Score.

The Enviro-Score, once activated, listens to the magnetic environment around the Metrasens Ultra for 60 seconds, and provides a recommendation of the sensitivity levels that the system can operate without spurious alerts occurring due to interference.







Press the Enviro-Score icon and step back 2metres. The beacon will turn blue, and the feature will indicate that the process has started. After 60 seconds the touch screen will display the original sensitivity screen and indicate the sensitivity choices with green (stable), orange (occasional false alerts) or red (unstable area).

It is important to understand the sensitivity levels that need to be achieved, depending on the con-ops/items you are intending to detect. If the result of the Enviro-Score recommendation falls below this required sensitivity level, please move the system slightly, and try again. Should the result be the same, please consider a different area to deploy the system to ensure accurate performance is achieved

## 7.3 RECOMMENDED DISTANCES FROM POTENTIAL SOURCES OF INTERFERENCE

You can locate the system near static metal objects, such as metal staircases, filing cabinets, or 'rebar' used in wall reinforcing. However, to avoid extraneous alerts, do not place the system close to any electrical products with moving parts, such as ceiling fans, elevators, photocopiers, and automated entry systems.

It is important to note that other less obvious moving parts, such as cooling fans within equipment, could also cause unwanted alerts.

Metrasens Ultra detects any moving ferrous object around the center of the system, so it is important to consider any objects that may be located behind the system or on the other side of any nearby walls.

The following table shows distances from potential interference sources and assumes a level 7 sensitivity setting. If the sensitivity is higher, the distance to the interference source should increase. If set lower, the range may be reduced.

| POTENTIAL INTERFERENCE SOURCE | DISTANCE | | | |
|---|---|---|---|---|
| | MINIMUM | | RECOMMENDED | |
| | METERS | FEET | METERS | FEET |
| ROAD TRAFFIC | 7 | 23 | 12 | 40 |
| CELL DOORS | 3 | 10 | 5 | 16 |
| CORRIDOR WITH PASSING TROLLEYS | 2.5 | 8 | 4 | 13 |
| SWIVEL CHAIRS | 2.5 | 6 | 3 | 9 |
| HVAC/AIR CONDITIONING UNITS/POWERED FANS | 2.5 | 8 | 4 | 13 |
| SWINGING DOORS | 2 | 6 | 3 | 9 |
| SCREENING PERSONAL WEARABLES (STEEL TOECAPS, RADIOS, KEYS) | 1.5 | 5 | 2 | 6 |
| LARGE ELEVATORS | 7.5 | 25 | 10.5 | 35 |
| SMALL ELEVATORS | 6 | 20 | 7.5 | 25 |
| AUTOMATIC DOORS | 2.5 | 8 | 4 | 13 |
| LOCKERS | 1.5 | 5 | 3 | 10 |
| | | | | |

## 7.4 ASSEMBLING THE SYSTEM

**⚠ CAUTION** The system and the base unit are heavy, with a combined weight of over 21 kg.

(46 lb.).

If you need to move the system to a different location, remove the system from the base unit and carry each component separately.

To assemble the Metrasens Ultra system, do the following:

1. Place the base unit in the location you selected for screening.

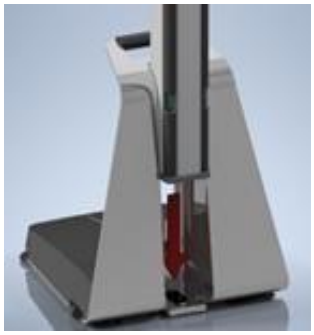


**Note:** If you need to adjust the position of the base unit at any point during system assembly, follow the instructions below to insert the system securely into the base. Then, use the system to lever the suction cup feet from the floor and carefully lift the entire system to the new position.

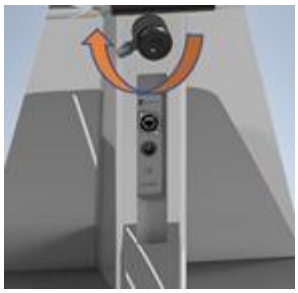
2. Check the black locking knob is unscrewed a couple of turns and the clamping lever is entirely in the anticlockwise position to inset the system into the base unit.



3. If fitted, disconnect any leads from the sockets on the back of the system.
4. Ensure the system is aligned so the touch screen is at the front and the connector sockets are at the back.
5. Place the indent at the bottom of the system into the block at the foot of the base unit.
6. Push the system back against the vertical slot in the base unit.



7. Ensure the base unit captures the groove at the back of the system.
8. Hold the system in this position until you have clamped it into the base.
9. On the rear of the base unit, turn the clamping lever at approx. 90° in a clockwise direction until it stops, then turn the black locking knob a couple of turns to secure the system to the base unit.
10. **Important**: Do not overtighten the locking knob - hand-tighten only.



# 8. Powering The System

**⚠ WARNING** You must ONLY use the AC/DC power adapter indoors, in a dry location.

**NOTICE** Only use the AC/DC power adapter supplied with the system or an alternative adapter authorized by Metrasens.

**NOTICE** Protect the AC/DC power adapter and its associated cables and ensure they do not cause a trip hazard.

You can run the Metrasens Ultra system from various power sources. However, the actual power source used is based on the priority sequence of:

## 8.1 DC POWER (IF PRESENT)

When the AC/DC converter is turned on, and is plugged into the Metrasens Ultra, the system will run from this power source.

If the internal battery needs charging and the system is plugged into the AC/DC power adapter, the system automatically charges the battery, even if the system is not switched on.

In that case, the touch screen display informs you of the current charge level.

**Note:** Keeping the AC/DC power adapter plugged in will not harm the internal battery. Charge level is maintained by the Ultra Battery Management System.

To avoid causing extraneous alerts, ensure that the AC/DC power adapter and cables are positioned at least 20 cm (8 inches) from the system. Placing the AC/DC power adapter at the rear of the base unit is fine, but avoid placing it on top, or by the side of the base unit.

### 8.2 POE (IF PRESENT)

In facilities where PoE sockets are available, the system can be directly plugged into this type of socket. However, where power is supplied through PoE, it is recommended that **Cat 6A** cables or above are used. The system uses the PoE 802.3bt standard, and draws up to 20 W.

*It is important to check the integrity of the Ethernet infrastructure before connecting to the system to ensure power is provided to the system as expected.*

To avoid causing extraneous alerts, always route the PoE cable away from the system.

If the internal battery needs charging and the system is plugged into PoE, the system automatically charges the battery, even if the system is not switched on.

### 8.3 BATTERY

If you turn on the system without a DC or PoE power source connected, the system automatically switches to run from the internal rechargeable battery.

## 9. Battery Status Warning

The Metrasens Ultra system has a battery status warning function to alert you to the current charge state.

### 9.1 BATTERY LEVEL LOW WARNING

When the battery charge state reaches the preset warning level during normal operation, a 'Battery Level Low' message appears on the touch screen. An audible battery warning tone is also periodically sounded.

By default, the preset 'Battery Level Low' warning threshold is set to 25% battery charge remaining. However, this value is operator configurable.

To continue operating the Ultra system, plug in an alternative power source (AC/DC power adapter, or PoE) as soon as possible, and close the warning message by touching OK.

## 9.2 BATTERY LEVEL CRITICAL

When the battery charge-state reaches the preset critical level during normal operation, a 'Battery Level Critical' message appears on the touch screen. An audible battery critical tone is also periodically sounded.

By default, the preset 'Battery Level Critical' threshold is set to 10% battery charge remaining. However, this value is operator configurable.

To avoid the Metrasens Ultra system shutting down, plug in an alternative power source (AC/DC power adapter, or PoE) as soon as possible, and close the critical message by touching OK.

# 10. Dismantling And Moving The System

**⚠ CAUTION** The system and the base unit are heavy, with a combined weight of more than 21 kg (46 lb.).

If you need to move the system to a different location, first remove the system from the base unit and carry each component separately.

**Note:** In the case of rapid deployment, simply use the system to lever the suction cup feet from the floor and carefully lift and move the entire system as one piece to the new position.

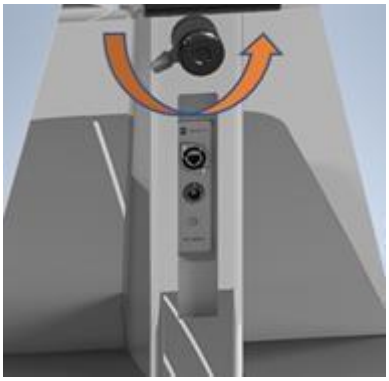
To dismantle and move the system, do the following:

1. Unplug any cables fitted to the rear-mounted connector panel.



2. Slacken the black locking knob by turning it anticlockwise a couple of turns. Do not loosen it more than this.

3. Turn the clamping lever to the fully anticlockwise position. This releases the system from the base unit.



4. Carefully lift the system in an upward direction until it is clear of the locating feature at the bottom of the base unit.
5. Once fully clear, lift the system forward and away from the base unit.



6. Temporarily place the removed system in a safe location.
7. To release the base unit from the floor, simply pull up the edge of each suction cup foot and lift.
8. Move the system and base unit separately to the new screening, or storage location.

## 10.1 SYSTEM STORAGE CONSIDERATIONS

Always store the system in a safe, cool, and dry place within the temperature range 5-15°C / 40-60°F.

If you need to store the system for a long time, ensure the battery is partially charged to 40% instead of 100% to help extend the battery life.

# 11. Troubleshooting

Use the information and procedures in the following tables to assist when an operational issue arises when using the Metrasens Ultra system.

## 11.1 SYSTEM START ISSUES

| PROBLEM | TROUBLESHOOTING STEPS |
|---|---|
| No indicators or alerts, and no display on the touch screen. | • Check the system switch on procedure has been correctly followed.<br>• If the system is using the AC/DC power adapter, check that this is plugged in correctly and that the AC power is switched on.<br>• If the system is using the battery as the power source, check the battery charge level. The best way to do this is to plug the system into the AC/DC power adapter and power on. Check the battery level icon on the dashboard screen. If it is too low, charge the battery by leaving the system plugged into the AC/DC power adapter until it is sufficiently charged.<br>• In the rare event that the system did not shut down properly, any subsequent startup could be affected. To check and/or correct this situation, hold down the round power button for ten seconds, release, then press again to start up.<br>• If the system is running off PoE, ensure that the system is plugged into an actual PoE socket, not just a basic Ethernet socket. |
| The touch screen is working, but no indicators or audible alert. | • Check the alert indicator brightness level is set to between 1 and 10, as a setting of 0 indicates covert operation, with no visual indicators operating.<br>• Check the alert volume level is set between 1 and 10, as a setting of 0 means the alert is in mute mode.<br>• If the touch screen is showing a large battery icon, the system is in charging mode rather than screening mode, press the power button to start screening. |
| The indicators and the alert are working, but no touch screen display. | • Touch the screen, as the touch screen backlight switches off after a time to conserve battery power.<br>• If you are using the system in bright sunlight, you may need to increase the screen brightness so that you can read it easily. |
| The indicators and the alert are working, but the touch screen does not respond. | • If you can see the touch screen display but it does not react to touch, clean, or dry your hands or remove any gloves to check if this is causing the problem. |

## 11.2 ALERT ISSUES

| PROBLEM | TROUBLESHOOTING STEPS |
|---|---|
| System alerts continually, or too frequently to screen people effectively. | • Check if the screening operator (or any other person) is standing too close to the system and triggering the alert - to check this, ask the person(s) concerned to move slightly and see if this triggers an alert.<br>• Check that the AC/DC power adapter is positioned at least 20 cm (8 inches) from the system. Placing the adapter at the rear of the base is acceptable but avoid placing the adapter or power lead close to the system.<br>• Check there are no moving metallic objects close to the system - such as barriers or other equipment. If the system is located outdoors, check if the wind is moving any metallic objects near the system.<br>• Check that the sensor unit is completely stable, and not physically moving at all. If the system is located outdoors, check if the wind is moving the system.<br>• Check the location, you can try to rotate the system 90° or move the system to a quieter location.<br>• Reduce the sensor sensitivity setting slightly. This reduces the chance of unwanted alerts, but it also slightly reduces detection performance. If the unwanted alerts are causing the level indicator to light up two bars, reduce the sensor sensitivity setting by two levels. One bar is approximately the same as one sensor level. |
| System does not alert on your test targets. | • Move a mobile/cell phone or a known ferrous metal object close to the system and check the system alerts.<br>• Check the sensor sensitivity is set to the correct level. If necessary, increase the sensitivity level (max = 10) and retest the system.<br>• Check your test target contains ferrous metal, as the system is not designed to alert on non-ferrous metals like aluminum (including drinks cans), or silver/gold.<br>• Detection performance depends on following the appropriate screening procedures for the system. Refer to the Installation Guide for details of possible factors affecting detection, such as distance from the system.<br>**Note:** An object must be moving for the system to detect it. |
| No power when connected via POE | • Check PoE switch/injector is powered on<br>• Verify port supports PoE (not all do)<br>• Try a different Ethernet cable<br>• Check physical condition of POE socket/cable |
| No data when connected via POE | • Ensure network switch is active<br>• Check IP configuration (DHCP/static)<br>• Test with another port on the switch<br>• Restart connected device<br>• Check physical condition of POE socket/cable |

## 11.3 BATTERY ISSUES

| PROBLEM | TROUBLESHOOTING STEPS |
|---|---|
| When on battery power, the system does not appear to operate long enough between charges. | • Ensure the system is plugged into the AC/DC power adapter for long enough to fully recharge the battery in between use.<br>• Check the charge level is over 80% at the start of the screening operation.<br>• Set the touch screen to auto-dim mode - this adds approximately two hours to the operating time.<br>• Reduce the alert indicator brightness to increase the operating time - do this by setting the brightness to a level where the red alarm level and blue zone indicators are clearly visible, but not brighter than they need to be.<br>**Note:** If you are operating the system outdoors in low temperatures (less than 0°C/30°F), the operating time is reduced when compared with indoor use. |
| Battery charge level is not shown on dashboard screen. | This typically means the battery is fully discharged. This can happen if the system has been stored for a long time, and the battery had a very low charge level when first stored. To recover the battery, leave the system plugged in to the AC/DC power adapter for a few minutes, and then turn on the system.<br>If this situation occurs frequently, the battery may require replacement - contact Metrasens Service or Support department for assistance. |

## 11.4 AUDIT REPORT ISSUES

| PROBLEM | TROUBLESHOOTING STEPS |
|---|---|
| Audit report takes a long time to display events. | If you choose to exclude detection events from the audit report, the system may have to filter through thousands of detection events to find each non-detection event. This delay on each page is normal. |

## 11.5 ETHERNET CONNECTIVITY ISSUES

| PROBLEM | TROUBLESHOOTING STEPS |
|---|---|
| IP address not displayed on the system information screen. | The IP address for any Metrasens Ultra system is only assigned when the system has been connected to an Ethernet network, or a laptop running the SMS application. Check that the Metrasens Ultra system is correctly connected to a suitable network, or device. |

# 12. Operating The System

## 12.1 SWITCHING THE SYSTEM ON AND OFF

To switch the system on, press and hold down the circular power button on the front face of the system for two seconds.



The system takes approximately five seconds to start and displays an introduction screen as it runs through its startup sequence. When ready for use, the system displays the standard dashboard screen and the alert indicator beacon changes from RED to GREEN.

To switch the system off, press the power button, or touch the 'Power Off' function on the touch screen.

**Note:** To maximize battery life, always turn the system off when not in use, and avoid letting the battery run down completely. However, if the system is still plugged in to a power source, the battery continues to charge until fully charged. In this case, the display shows the charging screen.

## 12.2 STANDARD OPERATING MODE

The touch screen is located towards the top of the system on the front face, and can be operated:

- with or without gloves.
- with wet hands, or in wet environments.

This user interface provides the necessary controls to set up and adjust most aspects of the system operations.

Some system functions are available directly from the dedicated icon controls on the dashboard screen. Further setup functions are available through the settings screen.

The dashboard provides the following functions and controls:

| No. | Control | Description |
|---|---|---|
| 1 | Top bar.<br><br>Battery charge icon.<br><br>Time display. | This is displayed on most screens and always shows the currently set system time, and the current battery charge status.<br><br>This icon shows the remaining percentage (%) of battery charge. A fully charged battery can power the system for typically 16.5 hours (depending on the system configuration and screening rate).<br><br>The displayed battery charge changes in 1% increments from 100% to 1%.<br><br>The time and format are set using:<br><br>Dashboard > Settings > Localization > Set Time/Date |
| 2 | Screening Mode Icon. | Displays current screening mode.<br><br>**Touch for shortcut to sensitivity control** |
| 3 | Lock Icon. | Touch to lock/unlock the touch screen |
| 4. | Gear Icon. | Touch to enter settings menu |
| 5 | System settings menu. | Shortcut to change system settings, volume, sensitivity and brightness. |




## 12.3 ADJUSTING SYSTEM LEVELS

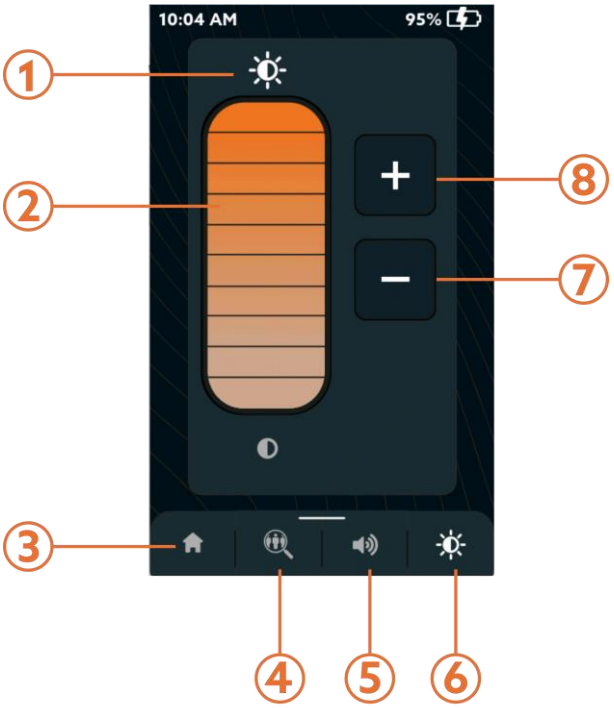
There are three system levels that are set up using an almost identical screen and controls:

- Sensor sensitivity.
- Alert volume.
- Alert indicator brightness.

From the dashboard screen, touch the required icon control to display the respective level setting screen.

A level setting screen provides the following functions and controls (the sensor sensitivity screen is shown as an example below):

| No. | CONTROL | FUNCTION DESCRIPTION |
|---|---|---|
| 1 | Level setting screen icon. | This shows the currently selected function:<br> - Sensor sensitivity<br> - Alert volume<br> - Alert indicator brightness |
| 2 | Level display. | Touch anywhere on this graphical display to move directly to that level setting or slide up or down to increase/decrease the level. |
| 3 | Home. | Touch to save your setting and return to the dashboard (Home) screen. |
| 4 | Sensitivity control. | Touch to alter the sensitivity setting. |
| 5 | Volume control. | Touch to alter the volume setting. |
| 6 | Alert indication control. | Touch to alter the beacon brightness setting. |
| 7 | Decrease button. | Decrease the numeric value of the setting/bars on the slider. |
| 8 | Increase button. | Increase the numeric value of the setting/bars on the slider. |




# 13. System Timeout And Lock

To avoid any unauthorized adjustment or use of the Metrasens Ultra system, the touch screen automatically locks thirty seconds after the last touch.

When locked, the dashboard screen displays a large grey padlock icon and does not respond to touch.

You can also manually lock the screen when you have configured the system by simply touching the lock control on the dashboard screen.

## 13.1 UNLOCKING THE SCREEN

There are two options to unlock the screen. Both are selected from the Advanced Settings screen.

- **NO PIN REQUIRED**
  In this mode, touch and hold the center of the padlock icon for more than three seconds to unlock the screen.

- **PIN REQUIRED**
  In this mode, touch the center of the padlock icon to display the PIN code entry screen. Then enter the four-digit PIN code and touch the unlock control to unlock the screen.

***Note:*** *If you lose or forget the PIN, it can be reset - refer to the Metrasens Ultra System Settings Guide*

# 14. Setting The Screening Sensitivity

The screening sensitivity of the system can be adjusted to one of ten levels, so it is more, or less sensitive to small ferrous objects. The higher the level, the smaller the magnetic signature needed to trigger an alert.

## 14.1 FACTORS FOR CONSIDERATION

The detection performance of the Metrasens Ultra system is related to:

- The object's magnetic signature size depends on the amount of ferrous material the object contains.
- The distance the object is from the system.

Therefore, a small ferrous object very close to the system can trigger an alert in the same way as a large ferrous object at some distance from the system.

In most screening situations, a compromise must be made between the system reliably detecting the objects you want, and the probability of the system generating unwanted or false alerts. Extraneous alerts are normally caused by distant moving objects like traffic, elevators, or doors, which create a magnetic signature.

The optimum sensitivity setting for any screening situation strikes the right balance between the factors below:

- Setting the Metrasens Ultra to level 1 means that only relatively large ferrous objects, moving close to the system, are likely to set off the alert. Small objects (even close to the system) will not be detected; neither will large objects further from the system. However, the probability of unwanted alerts is very low.
- Setting the system to level 10 means that very small objects cause an alert. This setting may also detect some larger objects that are quite far away from the system. However, the probability of unwanted alerts is high.

You can improve the system's screening performance by positioning the system away from any potential interference sources. You can also select the screening procedures which find the objects you want to detect.

## 14.2 SETTING THE SYSTEM'S SCREENING SENSITIVITY PRIOR TO USE

To set the Metrasens Ultra system's screening sensitivity, do the following:

1. Ensure there are some suitable test target objects available of the type the intended screening operation has been set up to detect.
2. Place the Metrasens Ultra system in the chosen screening location, keeping in mind the recommended distances from potential interference sources.
3. Switch the system on and set the sensor sensitivity to the maximum level (10).
4. Stand back about 2 m (6 feet) from the system and watch the signal strength indicator display. If more than one red bar flickers regularly, reduce the sensor sensitivity by one level.

5. Repeat the step above until the system appears stable. However, if the sensitivity needs to be reduced significantly before extraneous alerts cease, you may have to consider moving the system to an alternative location or investigate the immediate location for an interference source.

6. After making sure you are **not** carrying any ferrous objects, perform a test screening by walking past the system. The system should not give an alert.

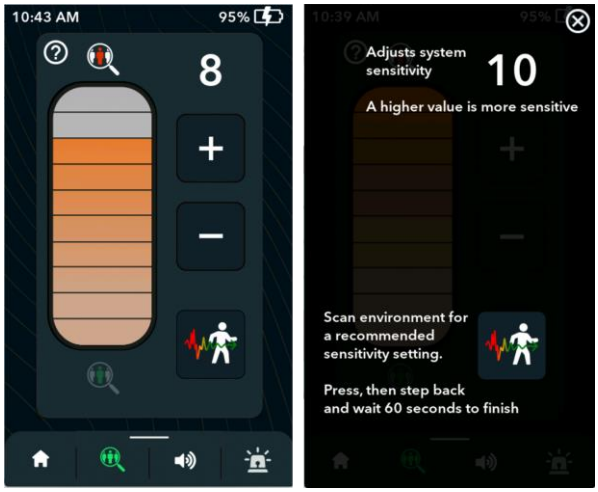
7. Carrying a test target object (the smallest you want to detect) perform another test screening by walking past the system. The system should detect the test target object and give an alert.

8. Perform further test screenings carrying a range of test target objects, ensure all are detected.

***Note:*** *The detection performance of the Metrasens Ultra system reduces when the sensor sensitivity level is decreased. To avoid failing to detect the objects you need to detect, try rotating the system slightly, or move it to a different position and then repeat the above procedure.*

Selecting the question mark icon from sensitivity selection screen will display information about the features on this screen.

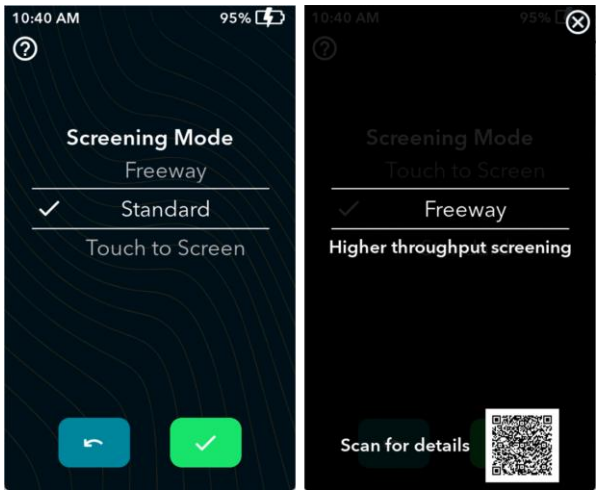
Press the cross in the top right corner to exit this screen.



Selecting the question mark icon from screening mode selection screen will display information about the screening mode on the rolling menu that is highlighted.

The QR code will take you to documentation that explains each screening mode in detail.

Press the cross in the top right corner to exit this screen.




# 15. Touch To Screen Operating Mode

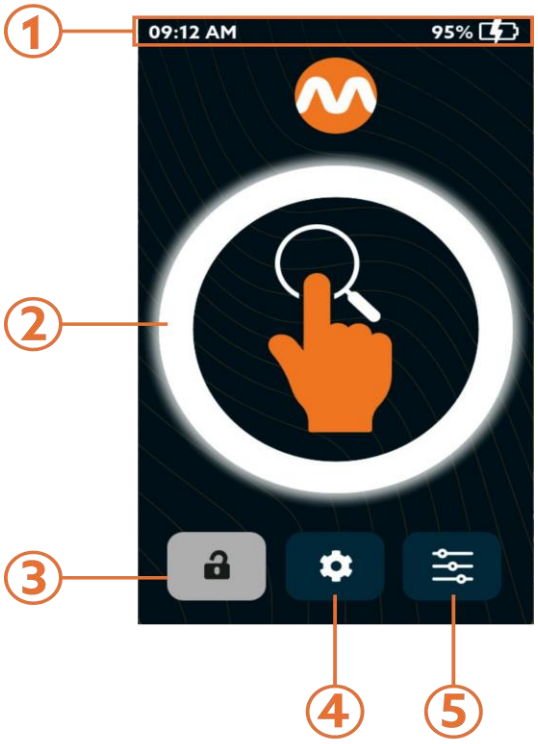
In Standard operating mode, the Metrasens Ultra system is always active and continually screens the local environment for magnetic signatures, and the operator simply needs to manage the flow of individuals to be screened.

However, in some circumstances (especially where the system is positioned close to a busy corridor) extraneous alerts can be triggered as people walk past. In this situation, an operator may prefer the system to be in standby mode most of the time but quickly start screening when an individual to be screened presents themselves.

The Metrasens Ultra system supports this method of screening with its Touch to Screen mode.

When configured to operate in this mode, the system illuminates the alert indicator beacon permanently red, to indicate that screening is suspended, and displays the Touch to Screen version of the dashboard. All the standard operating functions are available on this dashboard version, but the control layout is slightly different, as shown below:

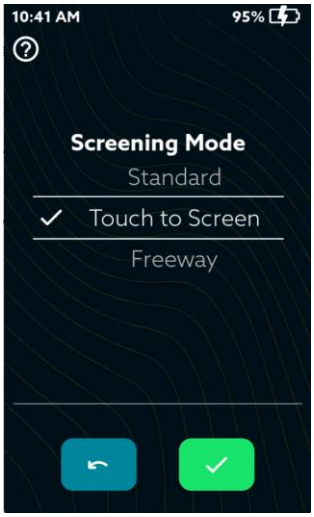
| No. | Control | Function description |
|---|---|---|
| 1 | Top bar. | Time, battery/charging information as standard. |
| 2 | Touch to Screen control. | The finger and button icon indicates the system is in the Touch to Screen standby mode. Touch to start the screening process. |
| 3 | Lock Icon/ | Locks the system touch screen. |
| 4 | Gear Icon | Shortcut to settings menu. |
| 5 | System settings shortcut. | Shortcut to change system settings, volume, sensitivity and brightness. |




## 15.1 USING THE TOUCH TO SCREEN FEATURE

To perform a Touch to Screen operation, do the following:

1. Select the feature by touching the gear icon on the home page >Advanced Settings>Screening Mode.




2. Touch to Screen can also include Screening records. This is a unique code generated after an individual screening period has finished. The code can be used to retrieve information about when the screening took place, and the detection results during this time using the Metrasens SMS tool. To enable this, select this in the *'Advanced Configuration'* menu.

3. Screening time can be configured again in the *'Advanced Configuration'* menu. The default is 4 seconds and can be increased in 1 second increments to a maximum of 7 seconds.
4. Momentarily touch the Touch to Screen control.
5. Once touched – a blue hourglass icon appears to show that the screening has not started. This lasts for two seconds and allows time for you to step away from the screening area. During these two seconds the system is not screening, and the alert indicator beacon remains red.




Do **not** attempt to start screening until the **orange** icon *(below)* is displayed.

6. After the two second pause, the orange screening active icon is shown on the screen. At the same time the alert indicator beacon turns GREEN, to indicate that screening is now active.




7. During the countdown period invite the subject to perform a normal 360° turn screening operation.

Once the screening time has expired, the following occur:

- If you have selected to show the screening record, this unique code will be presented on the screen.

  This will have a red illuminated circle, red beacon and text if there has been a detection

  If no detection has occurred, these elements will be green.






- If you have not selected screening records, a screen that indicates the result of the screening session will appear

- Red beacon and red cross for a detection during the screening session
- Green beacon and green tick for no detection during the screening session.



Once either one of the 4 screens shown above is present on the screen the following will take place on the touch screen:

- The screen will persist until the user touches the screen.
- The screen will return to the original T2S screen.
- The beacon turns RED.
- The system is no longer screening and is ready for the next screening session to begin.

## 15.2 TOUCH TO SCREEN MODE CONSIDERATIONS

If required, you can use the dashboard lock function to prevent unauthorized access to the system settings when operating in the Touch to Screen mode. If the system is locked, touch the highlighted lock control to unlock. If PIN security is enabled, enter the PIN code when prompted, to unlock the system.

# 16. Freeway Operating Mode

The Freeway operating mode is used specifically for high-throughput weapons screening and should be used in conjunction with the specific Freeway screening arrangement described below.

***Note:*** *Freeway mode should* ***not*** *be used where the objective is to detect small ferrous objects.*

Three settings, Low, Medium and High refer to the approximate magnetic signal of the objects to be detected.

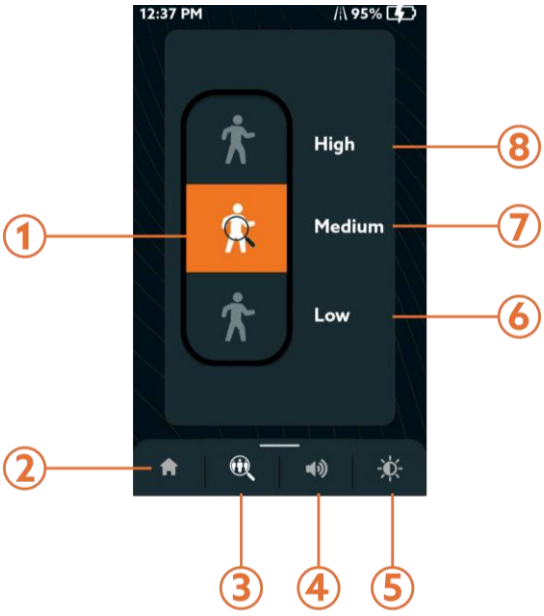
If the aim is to detect a high percentage of all weapons, bladed and otherwise, then the High setting should be used.

The medium setting will detect a high percentage of larger threat items but is less sensitive to smaller threat items than the high setting.

Similarly, if the aim is to focus on the detection of a high percentage of larger threat items, the Low setting should be used. Many smaller threat items will still be detected, but the percentage is far lower.

It is important that you discuss the sensitivity settings with your sales representatives and trainers to understand the best sensitivity mode for your security operation

| No. | Control | Function description |
|---|---|---|
| 1 | Sensitivity display | Can be used to slide the setting up or down between the three options. |
| 2 | Return to home screen. | Returns to the Freeway home screen. |
| 3 | Sensitivity Selection Icon | The screen that users can alter the sensitivity for the specific screening mode. |
| 4 | Volume Icon | Change the alert tone volume. |
| 5 | Brightness Icon | Change the LED brightness. |
| 6 | Low Setting | Low sensitivity label |
| 7 | Medium Setting | Medium Sensitivity label |
| 8 | High Setting | High Sensitivity label. |




For Freeway operation, create a screening channel by placing a suitable queue barrier in front of the system so the individuals subject to screening must walk through in single file. The distance between the queue barrier and the system should be exactly 76 cm (30 inches). It is recommended that at least two persons fully trained in this type of screening man the operation, one as a greeter, one as a Screener.

*For the best results, use Metrasens Freeway mat, which provides guidelines on lane set-up and placement.*

When performing the Freeway screening:

- Maintain at least a 1.2m (4 foot) separation between each person being screened.
- Maintain at least a 1.5-2 second gap between each person being screened to avoid nuisance alarm triggers from other individuals.
- Demonstrate the required arms-out method. This ensures the individual is fully screened for any weapons, but other objects which may cause an alert are held out of the screening channel.

Invite each person to:

- Hold any personal metallic objects across the queue barrier using the arms-out method - this is a **crucial** aspect of Freeway screening.
- Walk through the screening channel and pass the system at a normal walking pace.
- If the alert sounds and the indicator beacon show red, take whatever secondary screening steps are necessary to safely find and remove any metallic objects from the screened subject.

## 16.1 FREEWAY SCREENING ARRANGEMENT AND OPERATION EXAMPLE




| No. | | Description |
|---|---|---|
| 1 | Greeter. | The Greeter demonstrates the required arms-out method, requests the individual holds any personal metallic objects, and maintains at least a three second gap, with a 1.2m (4 foot) separation between the individuals being screened. |
| 2 | Personal items. | These are any metallic objects the screening subject may have on their person, such as phones, electronic tech, ear pods, key fobs, lighters, vapes, and so on - held over the queue barrier and out of the screening channel. |
| 3 | Screener. | The screener ensures the required arms-out method is used, checks for alerts, and manages any secondary screening steps, where necessary. |
| 4 | Queue barrier. | This physically defines the screening channel. |
| 5 | Screening channel. | The distance between the system and the queue barrier must be exactly 76 cm (30 inches). |

# 17. People Screening Mode

If your Metrasens Ultra has the embedded optical sensor below the touch screen *(serial numbers 3325-3310 onward)* your system can access the People Counting feature. This feature is available while using Standard, or Freeway screening modes.

The Metrasens Ultra will automatically detect if this hardware is present and produce a menu option within the 'Advanced Config' menu.

If this menu is present, once the feature is enabled, the home screen graphics will reflect the screens below.









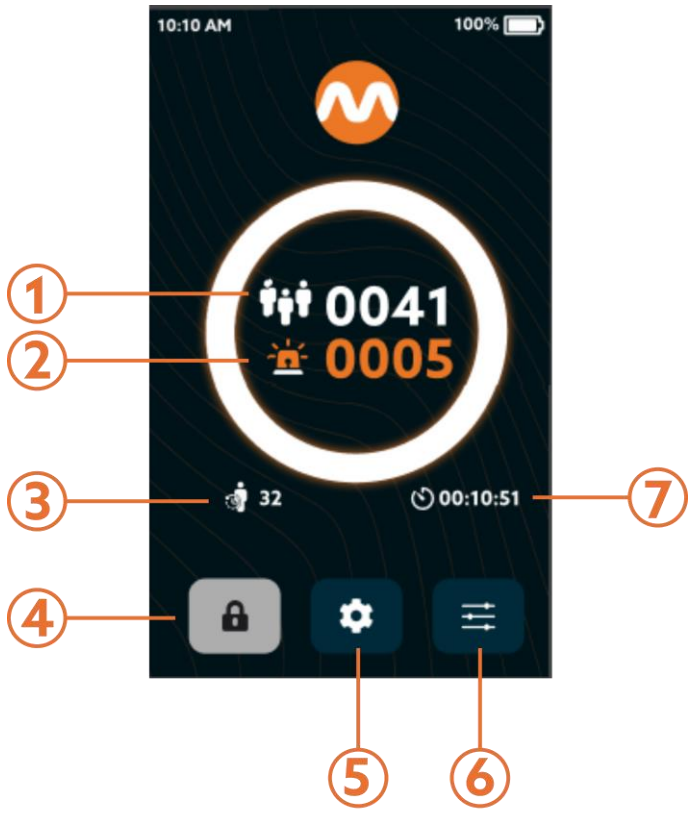

The people counter operates within screening sessions. To start a session, press the play button on the touch screen. The time counter will begin to indicate the length of the screening session.

The total passes within this session will be counted in the white numerical counter, and the total number of alarms detected during this session in the orange numerical counter.

If the screen is touched, the screening session will pause, for example, if a person being screened needed to be removed for secondary screening, so that the count is not affected in any way.

Pressing and holding within the circle will reset the counters to 0 and end the screening session.

| No. | | Description |
|---|---|---|
| 1 | People Count | Registers people successfully counted<br>*(Increments by 1 with each successful person detected)* |
| 2 | Alert Count | Registers the number of alerts within the screening session. |
| 3 | Last Count | Displays the last count when the system is reset once. To reset this counter, trigger the reset again<br>*(press and hold in circle)* |
| 4 | Lock Screen | Touch to lock/unlock the touch screen |
| 5 | Gear Icon | Touch to enter settings menu. |
| 6 | System Settings Menu | Shortcut to change system settings, Volume, sensitivity, and brightness. |
| 7 | Screening Time | The amount of time within the screening session |




## 17.1 USING THE PEOPLE COUNT FEATURE

The optical sensor that facilitates the People Count feature registers that a person has entered the designated screening area and will only count +1 once the sensor has indicated that the person has moved past the sensor.

The distance that the sensor will accurately count has been set to the screening channel width specified in the Freeway screening guide (31′/78cm). This distance can be increased to the 'Max' setting (set to 120cm) within the *Advanced Config* menu.

This feature has been designed in this way to reduce the chances of a false count during regular operation.

An example would be during a walk by screening con-op, if a person being screened caused an alert, and was told to stop, their presence in front of the sensor would not cause a false count whilst the security guard paused the count, and they were removed for secondary screening.

The results of a People Count session will also appear in the audit trail. These records appear as follows:

- Date/Time – People Count Started: 0
- Date/Time – People Count Stopped: (Number of people counted)

⚠ CAUTION




*Warning: Model numbers 3325-3310 and upward, that contain the People Counting sensor uses a Class 1 laser for optical sensing.* This Class 1 laser is eye-safe under all operating conditions in accordance with IEC 60825-1:2014 Safety of Laser Products.

Class 1 laser systems cannot emit levels of optical radiation above the exposure limits for the eye. They are safe during use, including long-term direct intrabeam viewing even when exposure occurs while using telescopic optics.

# 18. Floor Suppression

Metrasens Ultra is designed to work in many complex environments, however there are times when interference sources are present that may cause nuisance alarms at the lower zones.

Often this is from loose, ferrous flooring tiles where the Metrasens Ultra (although doing what it is supposed to – detecting moving ferrous objects) detects the movement of the floor itself as people walk past. This would present itself as regular alarms in the lowest zone.

***Note:*** *Metrasens recommend taking steps to remove or reduce the interference before selecting any suppression modes, such as repositioning the system or if possible, securing any loose tiles.*

Floor Suppression mode reduces the detection performance around the lowest zone and therefore can reduce the impact of interference sources that may be present and can be selected alongside any of our Screening Modes.

To turn Floor Suppression on, go to *Settings > Advanced Settings >Advanced config > Suppression Profile > Floor > Toggle to On*

Any Screening Mode home screen (Standard, Freeway or Touch to Screen) will now show the Floor Suppression icon in the top right-hand corner, as shown below:



Floor Suppression will remain on even if the system is restarted, therefore a message appears on startup to remind the user if there are any Suppression Profiles still active.

*To turn Floor Suppression off, go to Settings > Advanced Settings > Advanced Config > Suppression Profiles > Toggle to off*

This will reset the system to Standard screening detection performance at all levels. It is advised that the user checks that the Floor Suppression symbol is no longer present on the home screen to confirm that deselection was successful.

**Note:** If you have any questions about the impact of using this mode on detection performance, please contact your sales representative or support@metrasens.com

# 19. Alert Indication And Object Location

The Metrasens Ultra system has three different visual indicators, and one audible alert.




| No. | Description |
|---|---|
| 1 | **Alert indicator beacon**<br>Green = No ferrous objects detected.<br>Red = Ferrous object detected. |
| 2 | **Signal strength level indicator.**<br>0 bars = No detection.<br>L1 red bar = Detection - small signal.<br>L5 red bars = Detection - large signal. |
| 3 | **Object location zone.**<br>These light up in blue at one of five height zones, to indicate the approximate height of the detected object (see below). |

When the system detects a ferrous object, the following occurs:

- The color of the alert indicator beacon at the top of the system changes from green to red.
- The signal strength level indicator shows the current detection signal strength between one and five red bars. One bar illuminated shows the signal is quite weak. However, if the

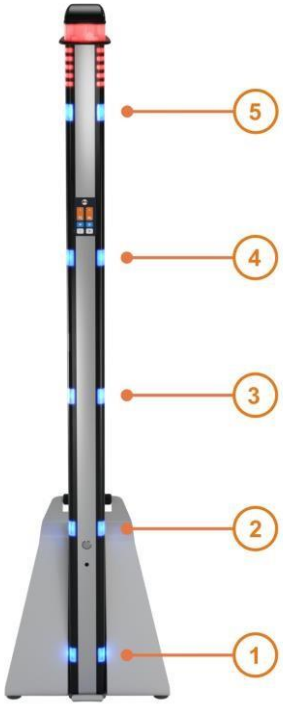
signal continues to get stronger, such as when the object gets closer to the system, then additional red bars are illuminated. Five bars show a strong signal.

- If enabled, the audible alert sounds.
- Once the object reaches its closest point, and the detection signal is at its strongest, one of the five blue zone location indicators is illuminated to show the approximate height of the object. However, due to the irregular shape of magnetic fields around an object, the actual location may be some height above or below the indicated zone.
- The beacon, signal level, audible alert, and zone indicators stay on for a short time. At the end of this period, the system is reset.

Screening can continue as soon as the beacon indicator switches back to green.

### 19.1 OBJECT LOCATION ZONE INDICATORS

The five object location zone indicators are assigned to the following identification numbers, where Zone 1 is located closest to the floor/Zone 5 towards the top. These numbers are used by the system when generating an alert detection audit trail report.




# 20. Settings Functions

The Metrasens Ultra system configuration and management functions are split between:

- Primary Settings
- Advanced settings, which may be more relevant to management/supervisory staff.
- Advanced Config – for use by experienced users or Metrasens support.

Touch the settings control (gear icon) on the dashboard to display the settings screen - which provides the following functions:

- System Information.
- Audit Trail.
- Screening Mode
- Touch Screen Brightness
- Advanced Settings.

To access a function, simply touch the required control to display a further screen. To exit the screen, touch the Exit Settings control.

*Metrasens Ultra touch screen displays question marks in the top left corner of settings menu and screening mode selection screens.*

*These icons, when pressed display QR codes that link directly to Metrasens Ultra documentation, hosted on our website and in some cases, information about the features or options presented on the screen.*

*Selecting the question mark icon from main menu screens will display a QR code taking you directly to the manuals.*

*Press the cross in the top right corner to exit this screen.*

**Note:** The system does not screen while you are using the Settings functions.

## 20.1 SYSTEM INFORMATION

To display the system information, do the following:

1. Touch the System Information control to display the Current firmware information.
2. To exit the screen, touch the Return control.

## 20.2. AUDIT TRAIL

During operation, the Metrasens Ultra system keeps a time and date-stamped record of every user operation, and every alert event. Typically, the last 100,000 events (or greater than three months operation) are securely stored in the system.

Authorized staff can view an audit report of these events at any time, with the information presented on the touch screen, starting with the most recent event, and going back, page by page, through previous events. This data can also be collected through a secure network interface, allowing central analysis and reporting.

To view the events currently recorded on the system, do the following:

1. Touch the Audit Trail control on the advanced settings screen.
2. Respond (as appropriate) to the "Would you like to include detection events in the audit trail" message. Detection events are all the detection alerts triggered during screening operation.
3. Touch Yes if you want to include all the individual time-stamped detection alert events. However, including these detection events can make the report quite a lot longer.
4. Touch No if you are only interested in viewing system and user-initiated function changes. Note that it may take several seconds to display each page when you exclude detection alerts, as the system may have to check through thousands of events to find the items to display.

The type of operations captured, and information reported in a typical audit trail include:

- Detection alerts, with signal strength and zone location.
- L1 to L5 indicates the detection alert signal level strength. Z1 to Z5 indicates the detection alert.
- Power-up starts, with power source and battery level.
- Power-off instances, with battery charge state.
- Changes to detection sensitivity, with previous and new settings.
- Changes to volume level, with previous and new settings.
- All unlock attempts, with success or fail status.
- Any configuration changes are made using the settings screens.
- PIN functions, including lock mode changes, PIN changes, failed PIN attempts.
- Date/Time changes.
- Battery warning level changes.
- Battery warning alarms reached during operation.
- Any unexpected system events.
- Any network connections made, and commands performed.
- People count information (start/stopped/count)

### Using the report navigation controls

The following grey report navigation controls are provided (from left to right):

- Go to the start of report 
- Go back to the previous page. 
- Go forward to the next page. 
- The blue control at the bottom of the screen allows you to exit the report and return to the advanced settings screen. 

## 20.3. SCREENING MODE

The Metrasens Ultra system can be configured to operate in one of the following three screening modes, depending on the screening requirement. More details can be found in the *'Operating the System'* guide.

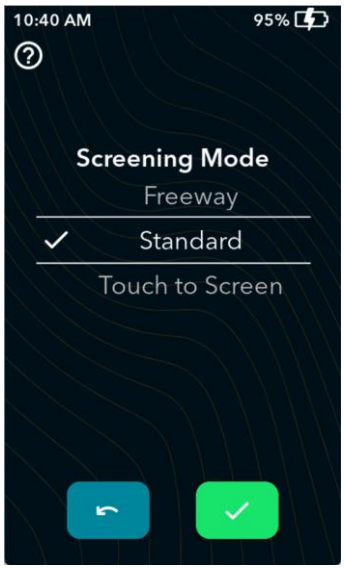
- **Freeway** – designed for partially divested, higher throughput screening.
- **Standard** (normal operating mode).
- **Touch to Screen** – designed for focused screening sessions.

**To select the screening mode, do the following:**

1. Touch the Screening Mode control.
2. Swipe up or down on the touch screen until the required mode is highlighted in the center with a check mark.

If Touch to Screen mode is selected, further configuration items are available

In the Advanced Config menu.




If Freeway mode is selected, the system prompts you that the sensor sensitivity setting will be changed to Freeway Medium.

Touch No to cancel, or Yes to proceed, as appropriate. See the Freeway operating mode section for details of the differences in sensitivity settings between the Standard and Freeway modes.

**Caution:** When changing from Standard to Freeway mode or back to Standard mode, you should always then set the specific sensitivity setting you need for that require for that screening mode.

3. To save your selection, touch the green confirm button
4. To exit without saving, touch the blue return button

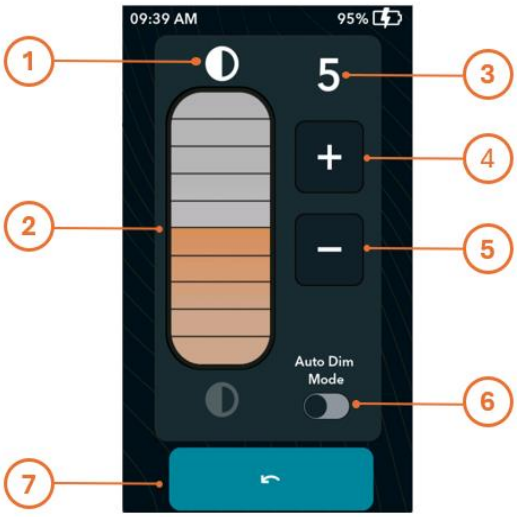
## 20.4 TOUCH SCREEN BRIGHTNESS

The touch screen brightness can be altered within this menu, with 10 incremental settings ranging from maximum to minimum. It is important to note that higher brightness does affect battery life.

Within this area, there is an option to enable 'Auto-Dim' which allows the screen to automatically turn off the display after approximately a minute. Metrasens recommends that auto-dim is always enabled to create the conditions for optimum battery run time.

Touch the Touch Screen Brightness control to display the brightness setting screen - which provides the following functions and controls:

| No. | Control | Function description |
|---|---|---|
| 1 | | Touch screen brightness screen icon. |
| 2 | Level display | Touch anywhere on this display to move to that level setting or slide up or down to increase or decrease the level. |
| 3 | Current level | This shows the current level setting. |
| 4 | Increase | Touch to increase the level setting. |
| 5 | Decrease | Touch to decrease the level setting. |
| 6 | Auto<br><br>Dim Mode | To maximize battery operating time, by default, the touch screen automatically dims 30 seconds after locking the screen.<br><br>To disable the default dimming and always keep the dashboard visible on screen, touch the Auto Dim Mode control on the left-hand side. |
| 7 | Return | Touch to save your setting and return to the settings screen. |




# 21. Advanced settings

From the settings screen, touch the Advanced Settings control to display the advanced settings screen. However, depending on the current system configuration, you may need to enter a PIN code before this screen can be accessed.

The following four topics cover the functions available:

- Network Settings
- PIN Code Options
- Battery Information
- Set Time/Date
- Advanced Config

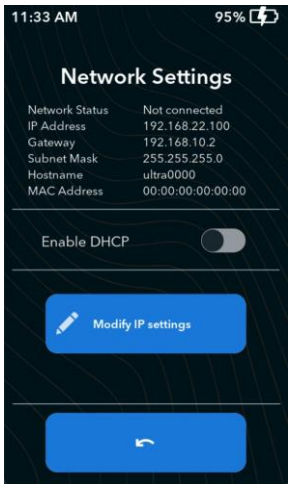
To access a function, simply touch the required control to display a further screen. To exit the screen, touch the Back to Settings control.

## 21.1 NETWORK SETTINGS

The Network Settings tab allows the user to control the method of establishing an IP address for the Metrasens Ultra and where the MAC Address and Hostname of your system can be found.

As standard, DHCP is enabled on the system therefore when the system is connected to an active Ethernet port, or a laptop, the blank IP address and associated information on this page will populate within 30 seconds.

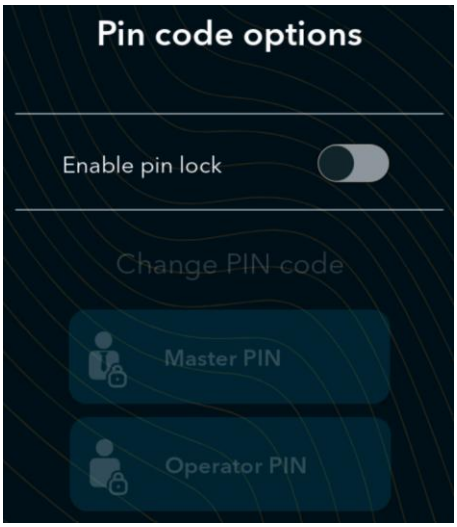



*For more information on network connectivity with Metrasens Ultra, please visit section 25 in this user guide.*

## 21.2 PIN CODE OPTIONS

To safeguard the Metrasens Ultra system, and provide secure operation, the system can be configured to require a four-digit PIN code to unlock the dashboard screen and access the available functions.



There are two levels of PIN code access available:

**Master PIN** - this provides full access to all system functions and configuration settings. Therefore, to ensure a high degree of security, this PIN code should only be made known to managers/supervisors, or others in authority. The factory default Master PIN code is 0000.

**Operator PIN** - this provides access to all the necessary screening functionality, but does not allow the operator access to the following system configuration functions:

- Sensor Sensitivity
- Alert Indication Brightness
- Localization
- Calibration
- Pin Code Options
- Screening Mode

The factory default Operator PIN code is 1111.

**Note:** Changing both factory default PIN codes as soon as possible is important to avoid unauthorized access.

To configure the PIN code options, do the following:

1. Settings>Advanced Settings > Pin Code Options
2. Enter the current Master PIN code when prompted.
3. If required:

– To clear an incorrect entry, touch the grey Backspace control, and re-enter the code.
– To exit the screen, touch the grey Back control.

4. Once you have entered the PIN code, touch the orange Unlock control.

If you enter an incorrect PIN code, the invalid numbers are cleared, and you can re-enter the code. However, details of all incorrect PIN code entries are logged in the system's audit trail.

When a correct PIN code has been entered, the PIN code options screen is displayed with the functions described in the following sections.

### Enable pin lock

This slide control allows you to set whether a PIN code entry is required to unlock the dashboard screen when the grey padlock icon is displayed.

Touch the left side of the control to disable PIN entry, or the right side of the control to enable PIN entry. If enabled, a check icon is shown on the control.

### Change pin code

To change the PIN code, do the following:

1. Touch the required Change PIN code control.

- Master PIN
- Operator PIN

2. Enter the new four-digit PIN code when prompted.

3. If required:

- To clear an incorrect entry, touch the grey Backspace control, and re-enter the code.
- To exit the screen, touch the grey Back control.

4. Once you have entered the new PIN code, touch the orange Next control to Confirm new pin code screen.

5. Enter the confirmation PIN code when prompted (this entry **must match** the new code).

6. If required:

- To clear an incorrect entry, touch the grey Backspace control, and re-enter the code.
- To exit the screen, touch the grey Back control.

7. Once you have entered the new PIN code, touch the orange Next control.

- If the confirmation PIN code matches, the new PIN code is accepted, and the system returns to the advanced settings screen.
- If the confirmation PIN code does not match, the entry is cleared, and you can re-enter the code.

### Resetting the PIN code if lost or forgotten.

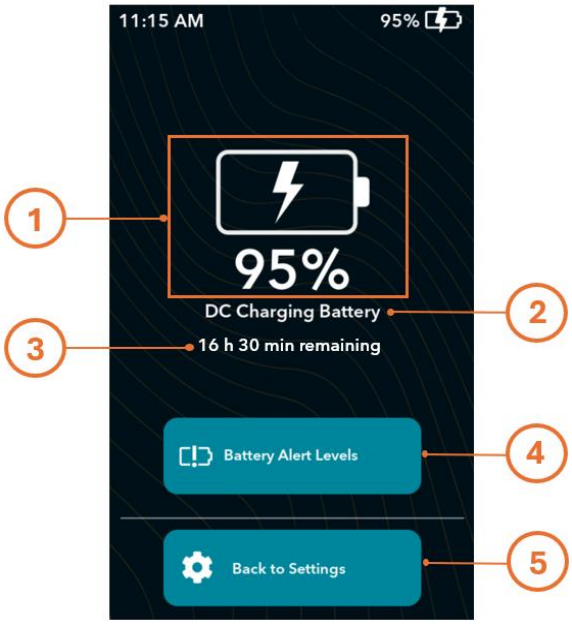
Due to security implications, Metrasens do not provide written instructions on how to reset/override PIN locked Metrasens Ultra unit. The PIN code of a Metrasens Ultra unit can be factory reset at any time.

Please contact your sales representative who can provide instructions on how to unlock the system.

## 21.3. BATTERY INFORMATION

Touch the Battery Information control to display the Battery Information screen - which provides the following functions and controls:

| No. | | Control/Function description |
|---|---|---|
| 1 | Battery Charge. | This shows the remaining battery charge as a graphic and percentage value (%). This information is also displayed in the top bar. |
| 2 | Power Source. | This shows the power source the system is currently using. This can be DC supply, Power over Ethernet (PoE), or Battery. |
| 3 | Estimated battery operating time. | This value is based on the current charge level, the system settings, and the usage rate. Therefore, this estimated time may not be the same as the system uses in the future. |
| 4 | Battery alert levels. | Touch to display the battery alert levels screen, where you can view or adjust the battery alert threshold levels. |
| 5 | Back to settings. | Touch to return to the Settings screen. |

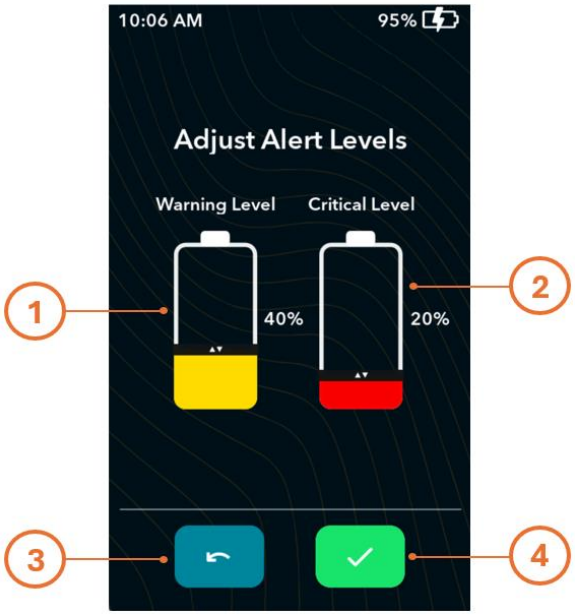



## 21.4 BATTERY ALERT LEVELS

The alert level adjustment screen provides the following functions and controls:

| No. | | Control/Function description |
|---|---|---|
| 1 | Battery warning level. | The system displays a warning message when the charge level decreases to this value.<br>By default, this level is set to 25% but is adjustable.<br>Touch and slide the control to change the warning level.<br>Note: The warning level must be higher than the critical level. Setting this to less than the critical level will automatically change the critical level, so it is 5% lower than the warning level. |

| | | |
|---|---|---|
| 2 | Battery critical level. | The system displays a warning message when the charge level decreases to this value.<br>By default, this level is set to 10% but is adjustable.<br>Touch and slide the control to change the warning level %.<br>Note: The critical level must be lower than the warning level. |
| 3 | Return. | Touch to return to the Battery Information screen without saving any changes. |
| 4 | Save and return. | Touch to save any changes and return to the Battery Information screen. |




## 21.5 TIME & DATE

The Metrasens Ultra system has an integral real-time clock that is used for time and date stamping all events recorded in the system audit trail. Therefore, it is paramount that the date and time values are set accurately should information need to be retrieved for investigative purposes.

The current system-time also appears in the top bar of the dashboard screen.

The clock's time and date values:

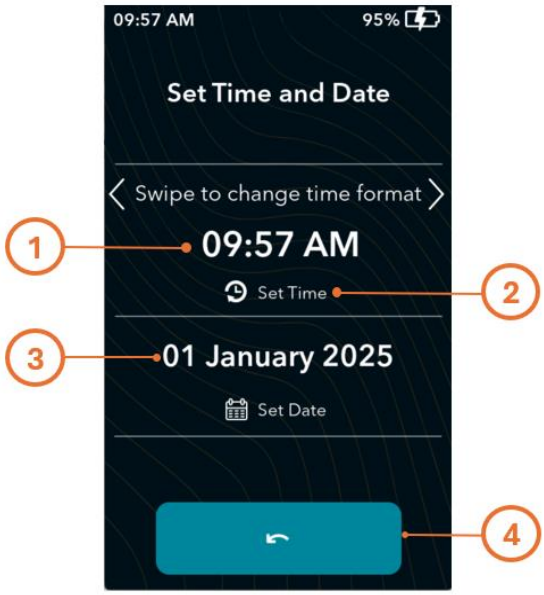
- are maintained by the system, provided that the battery does not run completely flat.
- may be automatically updated when the system is connected via Ethernet to certain networks. Otherwise, you will need to manually set the clock's time and date values.

> **Note:** The real-time clock does not automatically account for daylight saving time changes.

To set the time and date values, touch the Set Time/Date control on the localization screen - which provides the following functions and controls:

| No. | Control | Function description |
|---|---|---|
| 1 | Time display format. | Swipe the time field left or right to change between a 12-hour or 24-hour display format. |
| 2 | Set Time. | Touch to display the Set Time screen (see below). |

| | | |
|---|---|---|
| 3 | Set Date. | Touch to display the Set Date screen (see below). |
| 4 | Return. | Touch to return to the localization screen. |




**To set the time, do the following:**

1. Touch the Set Time icon.
2. The displayed format depends on whether 12 hours, or 24-hour format has been selected.
3. To change either the hour or the minute value, touch and hold the required value until the up and down arrows are displayed.
4. Once the arrows are displayed, swipe up or down to select a different number value from the list, or simply touch the required number.
5. Do one of the following:

   - To save your settings and exit the screen, touch the green save and return control.
   - To exit the screen without saving, touch the blue return control.

   In either case, the system returns you to the Set Date and Time screen.

**To set the date, do the following:**

1. Touch the Set Date icon.
2. To change the day, month, or year, swipe up or down to select a different number value from the list, or simply touch the required number.
3. Do one of the following:

   - To save your settings and exit the screen, touch the green save and return control.
   - To exit the screen without saving, touch the blue return control.

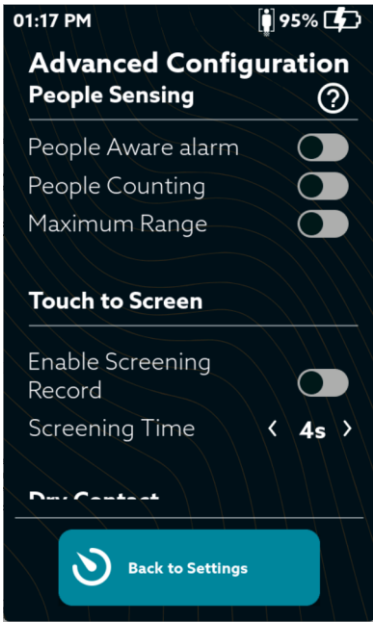
   In either case, the screen returns to the Set Date and Time screen.

# 22. Advanced config

The advanced config menu contains configuration items that may affect the fundamental operation of the system. Metrasens therefore recommends these are used by experienced users, or by Metrasens support staff.

The following options are available within advanced config:

- People Sensing (including 3 individual options)
- Touch to Screen (configuration items)
- Dry Contact configuration
- Suppression Profile
- MQTT



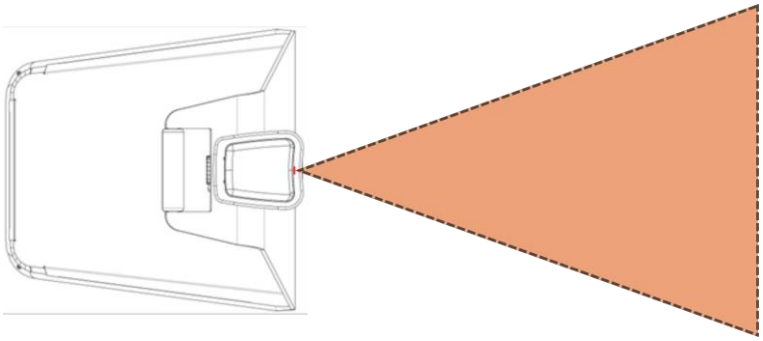

## 22.1 PEOPLE SENSING

The people sensing option refers to configuration items that utilize the optical sensor within Metrasens Ultra systems.

The optical sensor has two primary features – *People Aware Alarms* and *People Counting (explained in part 17 of this document)*

The optical sensor has a field of view that detects from its origin on the front of the system, at approximately a 20degree angle, up to the minimum or maximum distance set within this advanced config menu.

-



### Person Aware Alarm

This feature is automatically enabled when using the people counter, however it can be selected to use with any of the screening modes when not using people counter.

The feature pairs optical sensing and magnetic sensing together to reduce false positives from activity outside the screening channel.

- If a person passes the system within the optical sensor view and is not ferrous, **no alert** is presented to the end user (this is logged in the data however)
- If a person passes the system within the optical sensor view and is ferrous, a detection will occur and an **alarm will be presented** via audible and visual signals.
- If no person passes the system, but the system detects a signal from anywhere outside the optical sensor field of view, no alert will be presented, but this again is stored in the data stream.

*The feature aims to limit alerts from randomized interference events outside of the screening channel and is not to be used in areas of high interference in order to mask alerts.*

## 22.2 TOUCH TO SCREEN

This area can be used to select screening records (unique codes for each screening record) or to choose the screening time, which is the duration the system is actively screening for each touch to screen session.

*See section 15 for more information on Touch to Screen mode.*

## 22.3 DRY CONTACT

The dry contact is a relay, that is triggered by an alert from the system and can be used to notify access control systems, VMS systems etc. of a change of state within the Metrasens Ultra.

The default for this relay is open and closes upon an alert (for a configurable amount of time)

This option reverses the polarity of the relay, meaning it is closed as standard, and is opened when the Metrasens Ultra has a detection event.

*The dry contact is an optional component to enable integrations with 3rd party equipment. Please speak with your sales representative for more information on purchasing a unit with the dry contact output.*

### 22.4 SUPPRESSION PROFILE

This area is where users can turn the floor suppression feature on or off. This will take effect on any screening mode that is selected.

*Please see section 18 for more information about the suppression profile feature.*

### 22.5 MQTT

MQTT is a data communication protocol added to systems containing a people count sensor to increase the options for integration and data transfer.

This config area allows users to choose how they utilize MQTT, either via the Metrasens cloud broker (launching late 2026) or by using their own MQTT broker.

For more information on connecting using MQTT, please see section 25 for more information or contact support@metrasens.com

# 23. Connecting Via An Ethernet Connection

The Metrasens Ultra system provides a cyber-secure network interface, allowing remote management, data collection and event analysis, plus real-time integration into a facility's security or video management system.

One solution for managing the Metrasens Ultra system is to use the dedicated Metrasens SMS laptop application which provides several features, including the ability to:

- Collect, view, and export any connected event log.
- Remotely view any connected Metrasens Ultra system's status in real time for alerts.
- Check for any available Metrasens Ultra software upgrades and update the system with any new functionality (subject to a current support contract).

*For full details on the SMS laptop application please see the 'SMS User Guide' located in the Metrasens Ultra documents section at www.metrasens.com/documentation.*

Alternatively, the Metrasens Ultra system can be integrated into third-party security management system or Video management systems, using the Metrasens Ultra secure WebAPI / RESTAPI interface. Once authenticated, the Metrasens Ultra web server supports a wide range of function calls, enabling the third-party application to query or control many aspects of the Metrasens Ultra system's operation.

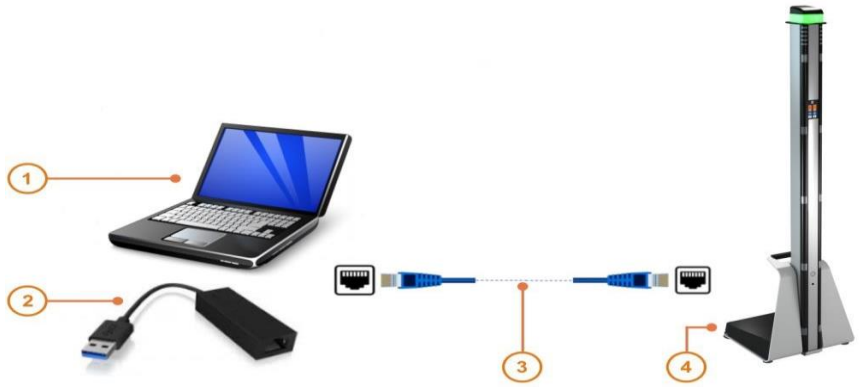
## 23.1 ETHERNET CONNECTIONS

Before using the SMS application or the WebAPI client interface, the Metrasens Ultra system needs to be connected to the laptop, or the facility's network infrastructure using a direct-wired Ethernet connection.

## 23.2 DIRECT ETHERNET CONNECTION

For a peer-to-peer direct connection, use a Cat 5+ cable to connect the laptop's Ethernet port directly to the Metrasens Ultra system's Ethernet port, as illustrated below.

This type of connection would typically be used in a portable system where the screening location changes, or where there is no Ethernet network infrastructure.




| Number | Item Description |
|---|---|
| 1 | Laptop running the SMS application. |
| 2 | Ethernet adapter (optional requirement). Laptops with no built Ethernet port can use a USB to Gigabit Ethernet adapter. |
| 3 | Cat 5+ RJ45 Ethernet Cable. |
| 4 | Metrasens Ultra System. |

## 23.3 ETHERNET CONNECTION CONSIDERATIONS

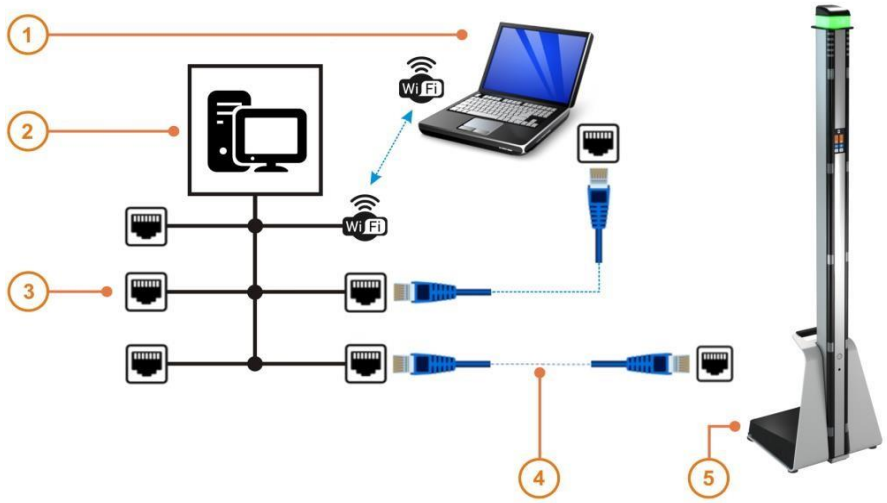
When the Metrasens Ultra system is connected directly to a laptop via a Cat 5+ cable or USB to Gigabit Ethernet adapter, the Metrasens Ultra system waits for twenty seconds and then assigns itself a default IP address. Once this IP assignment has occurred, an Ethernet icon is displayed on the Metrasens Ultra system's touch screen top bar, illustrated in the image below.

**Important**: When the SMS application is running on the laptop, you will need to enter the IP address shown on the System Information screen to connect. The format of all self-assigned default Metrasens Ultra system IP addresses is: 169.254.xxx.xxx.

## 23.4 CONNECTION VIA A FACILITY'S ETHERNET NETWORK

The Metrasens Ultra system's Ethernet interface is fully compatible with standard network infrastructures. Simply connect the Ethernet port of the Metrasens Ultra system into the facility's network and connect to it from your laptop or PC, via either a wired or a Wi-Fi connection, as illustrated below.

This type of connection would typically be used in a permanent system where the screening location doesn't change, and an Ethernet network infrastructure exists. Please note that more than one Metrasens Ultra system can be connected to the facility's Ethernet network infrastructure.




| Number | Item Description |
|---|---|
| 1 | Laptop or PC running the SMS application.<br><br>Connection can be made via a direct-wired Cat 5_ RJ45 to RJ45 Ethernet cable, depending on the laptop/PC and facility IT system specification.<br><br>Laptops with no onboard Ethernet port can use a USB to Gigabit Ethernet adapter. |
| 2 | Facility IT system. |

| Number | Item Description |
|---|---|
| 3 | Facility Ethernet network infrastructure with direct-wired and WI-FI connection types available. |
| 4 | Cat 5+ RJ45 to RJ45 Ethernet cable. |
| 5 | Metrasens Ultra system. |

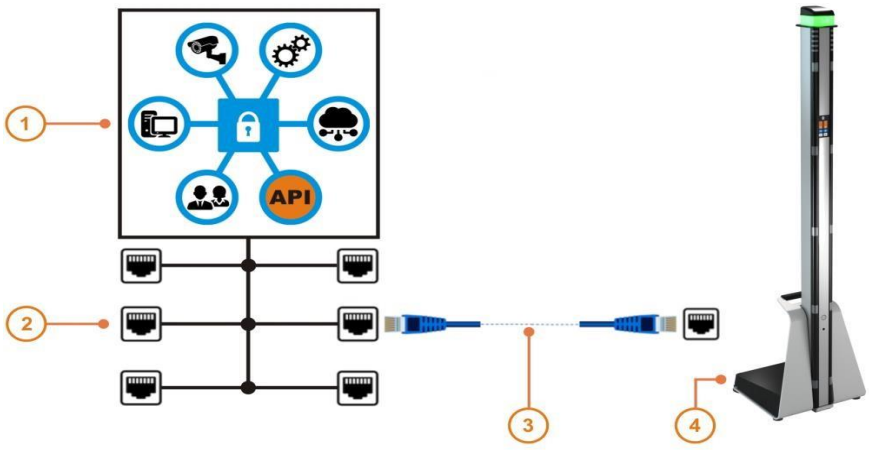
# 24. Ethernet Connection Considerations

When a Metrasens Ultra system is connected directly to the facility network infrastructure, the network will automatically provide an IP address to that system through a DHCP server, typically within a few seconds of plugging the Metrasens Ultra into the network. Once this system-level IP assignment action has occurred, an Ethernet icon is displayed on the system's touch screen top bar, illustrated in the image below.



**Important**: When the SMS application is run on the laptop, you will need to enter the IP address shown on the respective Metrasens Ultra system's information screen to connect to that specific system.

## 24.1 CONNECTING WITH A WEBAPI CLIENT



## 24.2 FINDING THE IP AND MAC ADDRESSES OF A METRASENS ULTRA SYSTEM

When connecting to an Ethernet network, as a minimum you will need to know the IP Address for the Metrasens Ultra system.

To find this information, do the following:

1) Touch the Settings button on the dashboard to display the settings screen.
2) Touch System Information.

The first line shows the IP Address; the second line shows the MAC Address.

## 24.3 CONNECTIVITY CONSIDERATIONS

- IP address - For a specific Metrasens Ultra system this may change over time, depending on the network/computer it is connected to.

| Number | Item Description |
|---|---|
| 1 | Facility security management system running WebAPI Client. |
| 2 | Facility Ethernet network infrastructure. |
| 3 | Cat 5+ RJ45 to RJ45 Ethernet cable. |
| 4 | Metrasens Ultra system |

- MAC address - This is the unique identifier for that specific Metrasens Ultra.

- Hostname - This is the permanent IP name for that specific Metrasens Ultra system, and it is set during production. The hostname always has the prefix “ultra”, followed by the last four digits of the MAC Address. For example: ultra1234.

In certain circumstances, the hostname can be used as an alternative to the IP Address. However, the hostname may not be usable when the system is directly connected to a laptop via a Cat5 Ethernet cable - in this case, use the IP address.

## 24.4. STATIC IP SELECTION

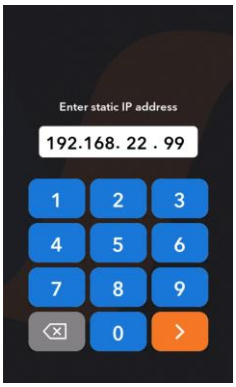
The Metrasens Ultra uses DHCP as the default setting when connected to a network, laptop or PC, however, the system also has the ability for a user to assign a static IP address.

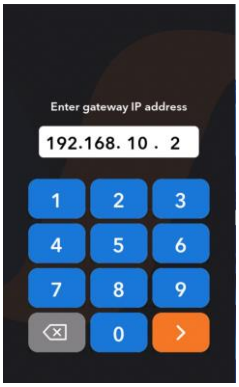
To assign a static IP address, do the following:

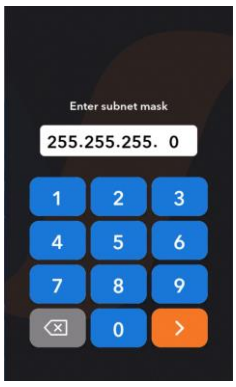
1) Click the Settings button on the touchscreen home page.
2) Click the Advanced Settings button. 

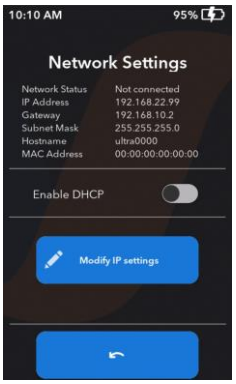
3) Click the Network Settings button. 

1. 

2. 

3. 

4. 

5. 


DHCP is enabled as standard on the Metrasens Ultra system and is shown as enabled by the tick. Clicking this button unchecks the Enable DHCP button *(fig.1)* and will open a series of screens where the user can enter their chosen static IP *(fig.2)*, gateway IP *(fig.3)* and the subnet *(fig.4)*.

Once the orange arrow is clicked on the subnet mask page, the Network Settings screen will open and show the information that has been entered *(fig.5)*.

Once a connection to a network has been established, the *Network Status* will show *Connected* and the Ethernet icon will appear in the top right corner of the touch screen.

- Clicking the Modify IP settings button will allow you to edit the information entered in the static IP fields e.g. set a new static IP address.
- Clicking Enable DHCP will set the Metrasens Ultra back to the default DHCP settings and after a short wait, the IP address, gateway and subnet mask will be populated if still connected to a network, laptop or PC.

# 25. Communication Protocols

Metrasens Ultra utilizes two communications protocols for data transfer – Rest API and MQTT:

## 25.1. RESTAPI

REST API is the original communication protocol available on the Metrasens Ultra. It is used by the Metrasens SMS program and can also be accessed via third-party API tools such as Postman or Insomnia to communicate with the Ultra.

The Metrasens REST API provides HTTP endpoints using standard methods:

- **GET** requests to retrieve data from the system
- **PUT** requests to modify system parameters

These requests follow a traditional request/response model, where each API call returns a single response. As a result, continuous data monitoring requires repeated polling of the API. Unlike MQTT,

the REST API does not support a "push" mechanism, so no data is sent automatically without a request.

Example:

**[GET]** *https://IPADDRESS/config/general*

This GET request queries the system for the current system configuration.

The response provides the user with the ability to remotely alter via PUT command:

- Sounder tone/volume
- System sensitivity,
- Dry contact output time
- Zone hold (time the blue zonal lights stay illuminated following an alert)
- Beacon hold (time the beacon light stays illuminated following a state change)
- Beacon brightness
- Level brightness
- Zone brightness

For a full list of available Metrasens API endpoints, please contact *support@metrasens.com*

## 25.2 MQTT

***Available in units with embedded optical sensor from May 2026 onwards***

Software release 5.0 introduced MQTT protocol to the Metrasens Ultra, enabling a "push"-based data model option. For example, when an alert occurs, an MQTT message is automatically published to the configured broker provided it is listening/subscribed to the correct topics.

Users can choose to:

- Connect the system to their own MQTT broker to build custom integrations, or
- Use the Metrasens MQTT broker to connect to the Metrasens Cloud *(launching late 2026)* for Metrasens data analytics.

To test data communication, users can connect to the broker and:

- Subscribe to relevant topics to observe messages from the Ultra
- Publish test messages where applicable to validate device responses

Using tools such as MQTTX (recommended), Postman (which supports MQTT), or command-line clients (e.g. mosquitto_sub / mosquitto_pub).

For a full list of available MQTT topics for the Metrasens Ultra, please contact *support@metrasens.com*.

### 25.2.1 DEFAULT SETTINGS

In the 'Advanced Configuration' menu, the 'Default Setting' is MQTT configured to the Metrasens Cloud service.

*This service will be launched along with Metrasens IQ analytics for the Metrasens Ultra system, late 2026 – full details will be provided at time of launch.*

Turning off the default setting within the advanced configuration menu, will trigger the on-screen keypad to appear. This is where the IP address of the customer MQTT broker will be entered.

Users can subscribe to Alert or TOF topics which provide information on alerts and people count information.

Example Topic:

dt/ultra/MACADDRESS/alerts

Data return:

dt/ultra/MACADDRESS/alerts { "timestamp", "magnetics" : true, "presence" : false, "level" : 1, "zone" : 2, "beacon" : "green" }

Please see below for an explanation of the terms in the data return example

| Term | Function |
|---|---|
| "timestamp" | Epoch time of data event |
| "magnetics" | Can be "true" or "false" depending on the system as detected ferrous content |
| "presence" | Can be "true" or "false" depending on if a person has been detected by the optical sensor |
| "level" | Can be 1-5 and refers to the level indicator at the top of the system which gives an approximation of the magnetic signature seen |
| "zone" | Can be 1-5, with 1 being the lowest zone on the system |
| "beacon" | Green or Red depending on alert state |

For more information on MQTT, please contact support@metrasens.com




metrasens.com | info@metrasens.com