



Ferroguard Assure MRI Safety Manager User Manual

Version 7.0 | 2023

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Foreword

The equipment described in this guide is subject to continuous development and improvement. Consequently, there may be minor variations in specifications, facilities or operation 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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Patents

Metrasens screening technology used in Ferroguard® Assure 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.

About this guide

This guide describes the operation of the MRI Safety Manager. It provides detailed information on the following tasks:

- Operating the system.

It is intended for use by all technical personnel and suitably trained operators who install and operate the system.

Document version: v7.0

Part No. 2526.

Original language

English is the original language of this guide. If you are reading a translated version of this guide and have a question about the intended meaning of any translated text, always consult the original English-language guide. If you do not have a copy, please request a copy directly from Metrasens.

Important Information

CRITICAL SAFETY INFORMATION

Ferroguard is designed for use outside the "5 Gauss" line.

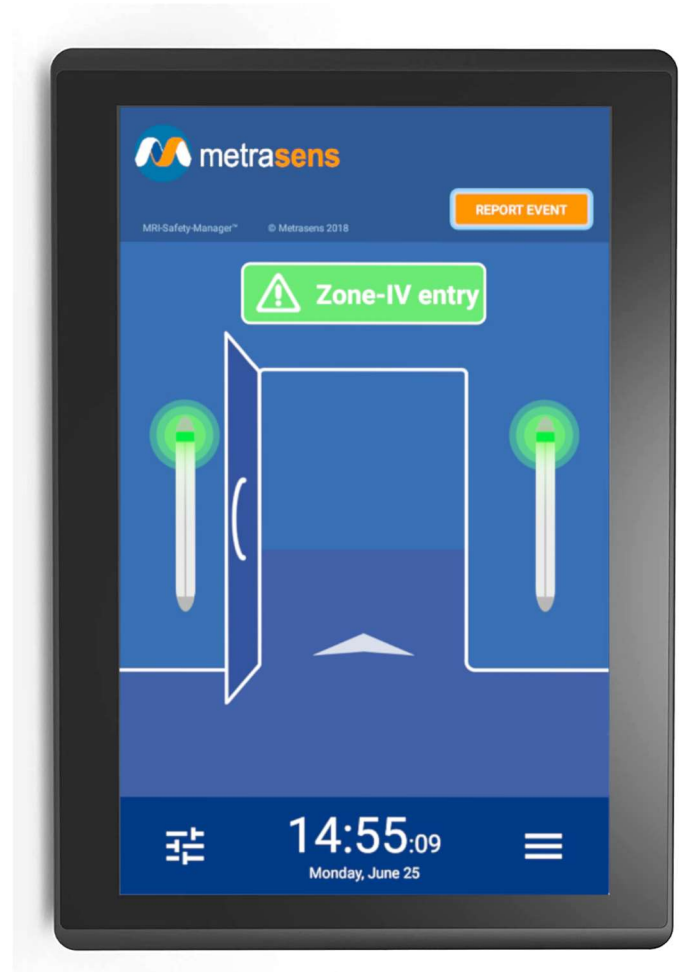
Ferroguard should not be used to replace current pre-MRI screening procedures.

The safety of staff and patients is best served by the combination of conscientious screening protocols, thorough staff training AND installation of a ferromagnetic detection system used in the correct manner.

All Ferroguard ferromagnetic detection products are entirely passive in operation and are completely safe for your staff, patients and MRI image quality.

Introduction to Ferroguard Assure MRI-Safety-Manager™

Ferroguard Assure MRI-Safety-Manager (MRI-SM) enables you to monitor and take control of your MRI projectile safety. It brings the live status of Ferroguard Assure ferromagnetic detection system into your control room; It provides Analytics and reporting to help you spot changes in workflow and movement of ferrous items; It offers educational material and guidance tools which can be used to maintain awareness and adherence to procedures. This manual enables you to get the best from your Ferroguard Assure MRI-Safety-Manager.

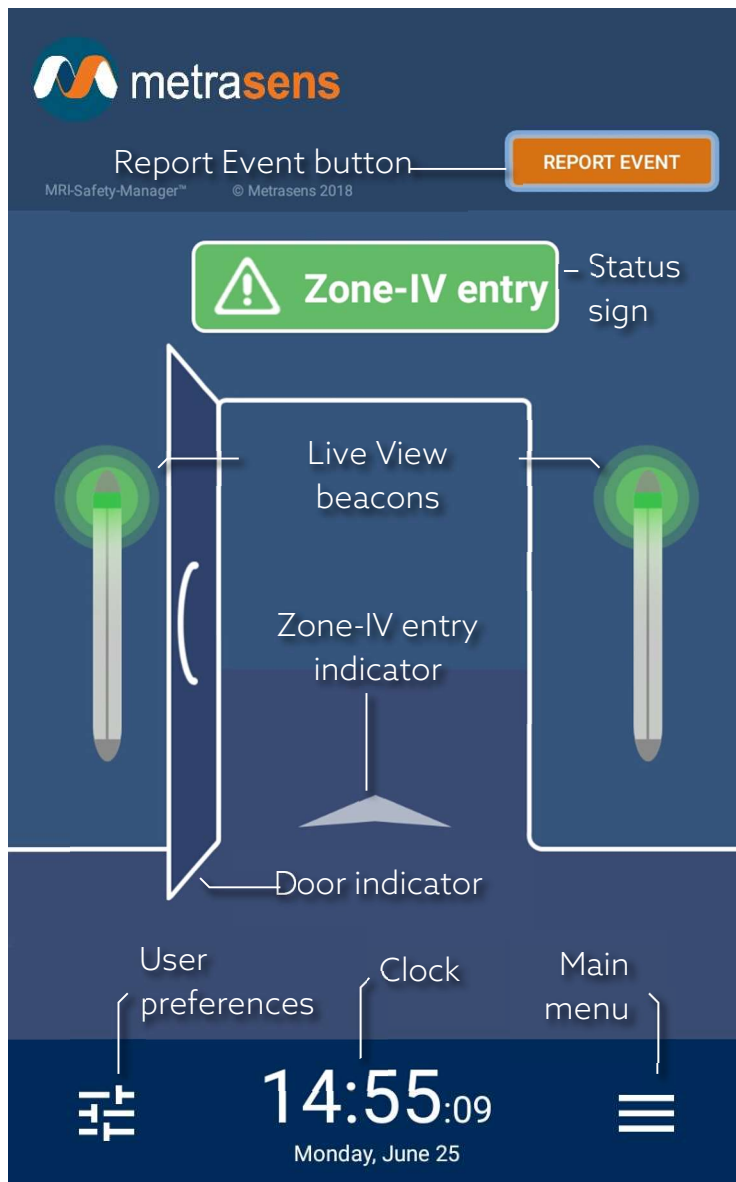


Roles

These are the roles involved in the set-up and use of your MRI-Safety-Manager:

- User** MRI-trained individual (Level 2 MR personnel, technologist, radiographer)
- Super-user** The Super-user has full access to all features of the MRI-Safety Manager™, including Analytics, and System Test.
- Field Service Engineer** Metrasens authorized engineer who will install and commission your Ferroguard products and provide in-service training.

Ferroguard MRI-SM Touch-screen User Interface



LIVE VIEW

MRI-Safety-Manager Live View shows the status of the Zone-III / Zone-IV entryway.

LIVE VIEW BEACONS

The Live View beacons show the ferrous alert status: red when a hazard item has been detected, green otherwise.

DOOR INDICATOR

Shows whether the Zone-III/Zone-IV door is closed, moving, or open.

ZONE-IV ENTRY INDICATOR

Animated arrow shows when an individual or item of equipment passed into Zone-IV.

STATUS SIGN

OK	No hazard detected, door stationary
Zone IV Entry	An individual or item of equipment passed into Zone IV
Warning	Ferrous item detected
Ferrous Entry	A ferrous item crossed from Zone III into Zone-IV
Door Moving	Zone III/IV door is in motion
Standby	The Live View beacons are inactive while the door is closed. Only enabled if Continuous mode (User preferences) is off

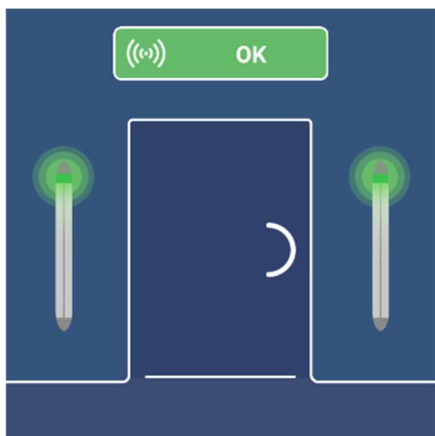
CLOCK

The clock shows the current date and time at your location. Adjust the date and time settings via Settings in the Main menu.

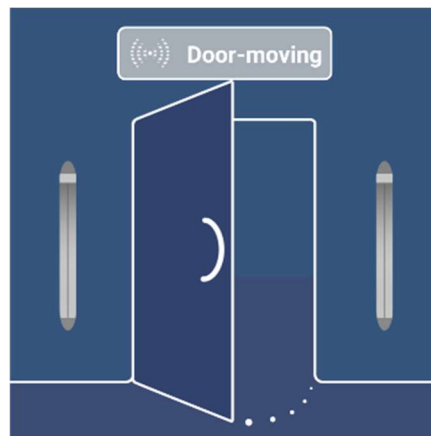
REPORT EVENT BUTTON

Significant events can be recorded here. You can hide this button if necessary. See Settings.

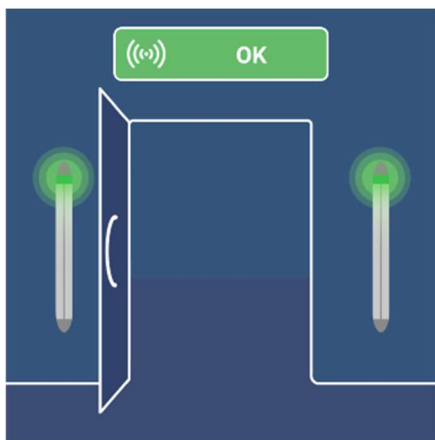
Live View entryway indicators



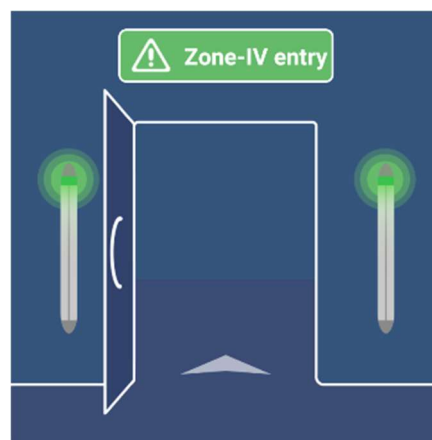
Door closed, no ferrous item detected (beacons suspended)



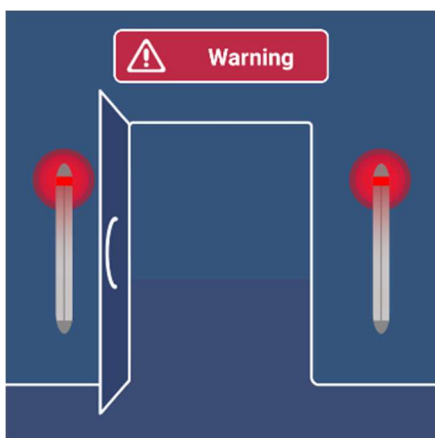
Door opening (beacons



Door open, no ferrous item detected IV



Zero-magnetic entry to Zone-IV

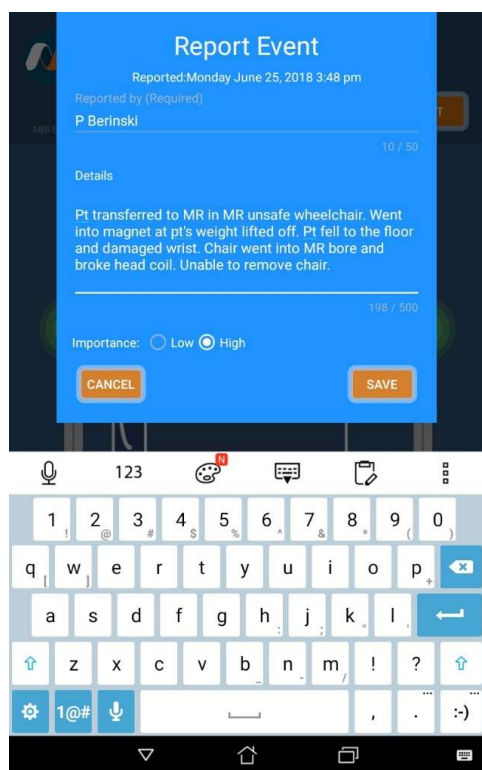


Moving ferrous item detected



Ferrous entry, item on right-hand side of doorway

Report event

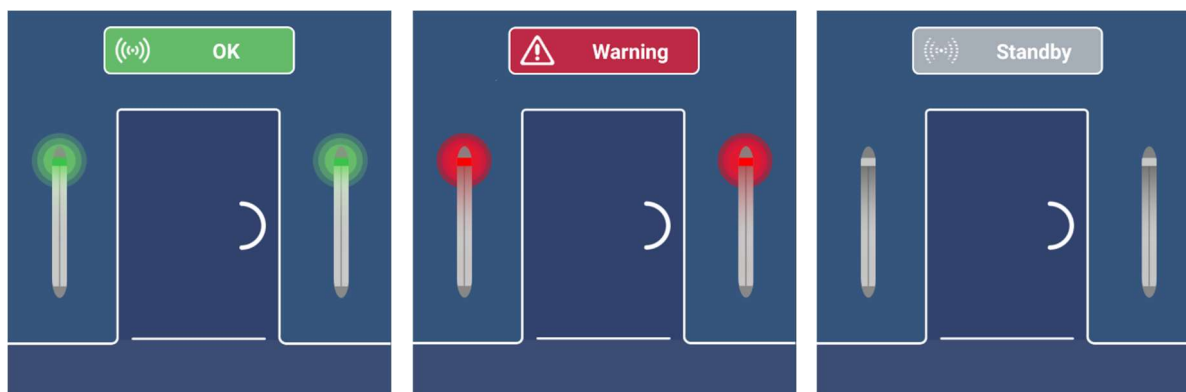


To record when a ferrous object has been unintentionally taken into Zone-IV, tap the REPORT EVENT button in Live View. Enter details of the incident and tap SAVE to store the details, or CANCEL to discard them.

Records can be retrieved via the EVENT VIEWER feature in the ANALYTICS section.

User preferences

In Continuous ViEW[®] mode the Live View beacons display the ferrous alert level: red or green. To disable the Live View beacons while the door is closed, swipe the Continuous mode toggle switch to the Off position.



Continuous ViEW[®] mode

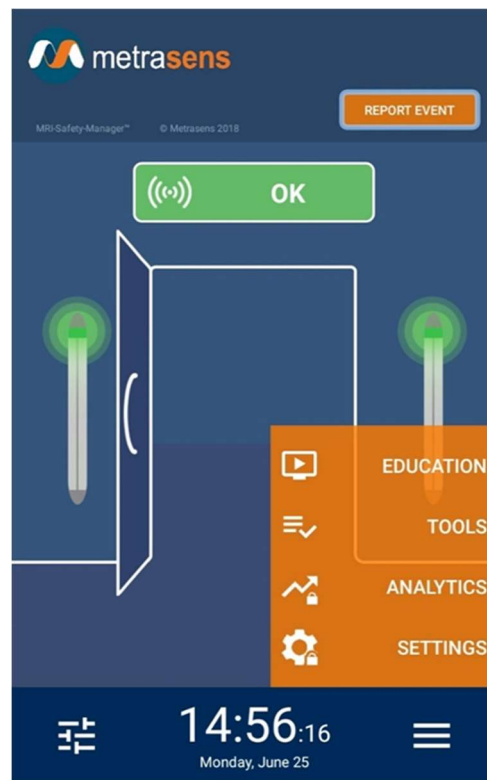
Continuous ViEW[®] off

Note: The MRI-SM Continuous ViEW[®] switch does not affect the ViEW[®] behavior of the Ferroguard Sensor Units.

Main Menu

The main menu provides access to further features of Ferroguard Assure MRI-Safety-Manager.

Items marked with a lock symbol require the super-user passcode to access them.

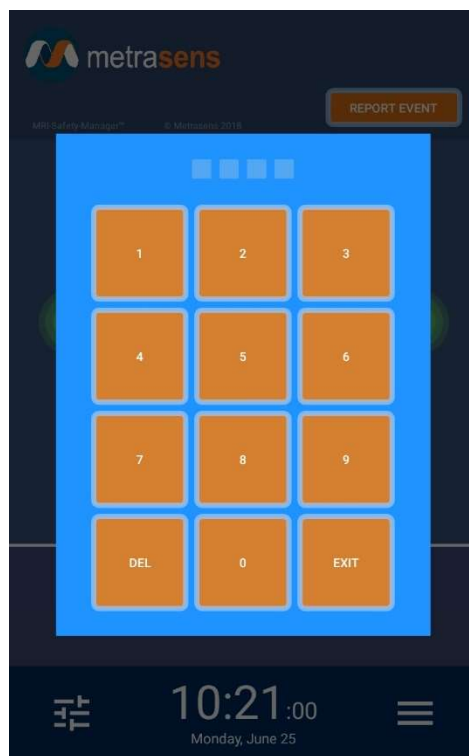


Super user secure access

The Super-User can access secure features by entering their pass code. The pass code is set up by your Metrasens authorized Field Service Engineer.

If you forget your pass code, contact Metrasens support (see end of this document).

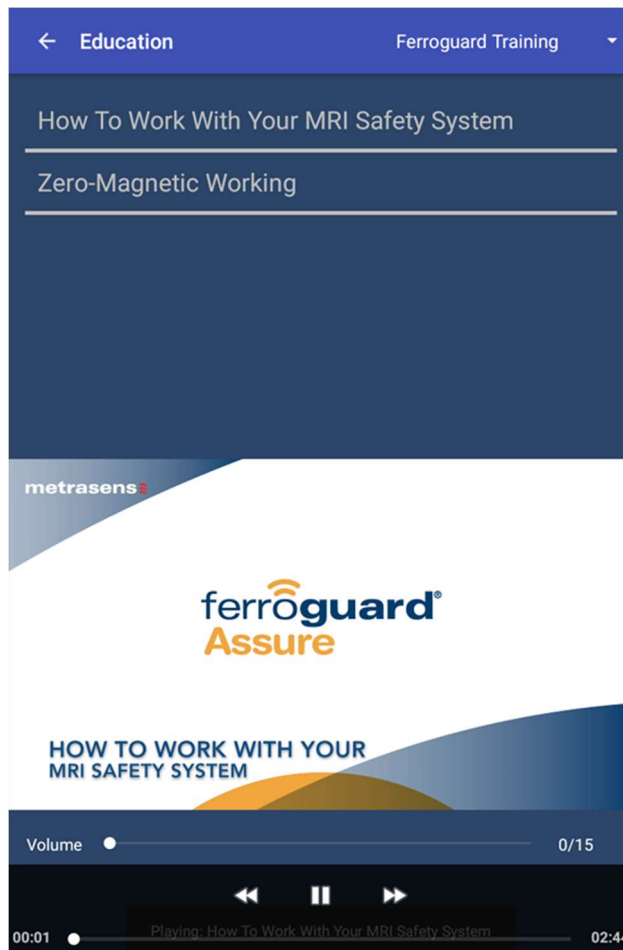
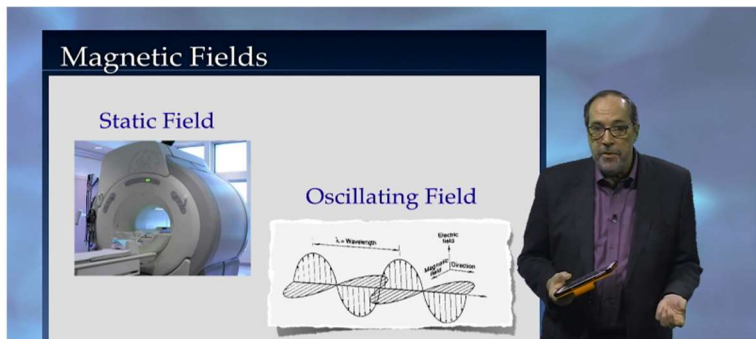
To return to Live View, tap EXIT



Education

A number of educational videos are provided. Select a category from the top right pop-up menu, then select a video from the list in the top half of the screen.

To return to Live View, tap the back arrow, top left.

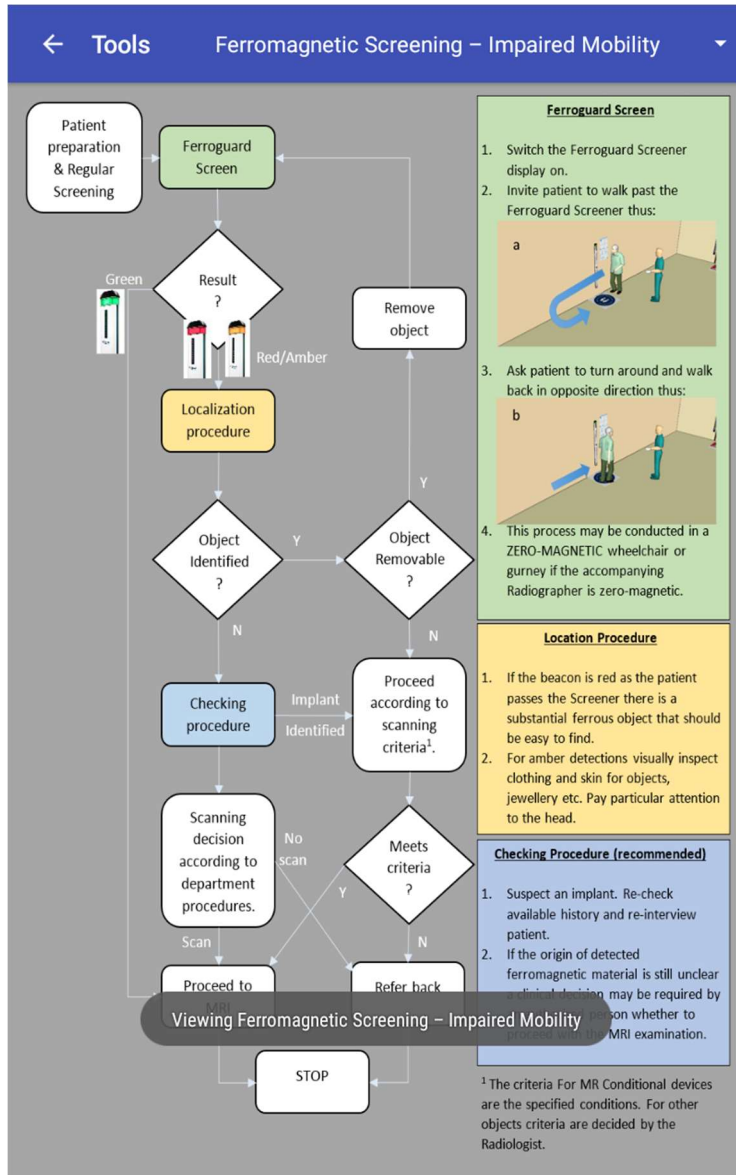


Tools

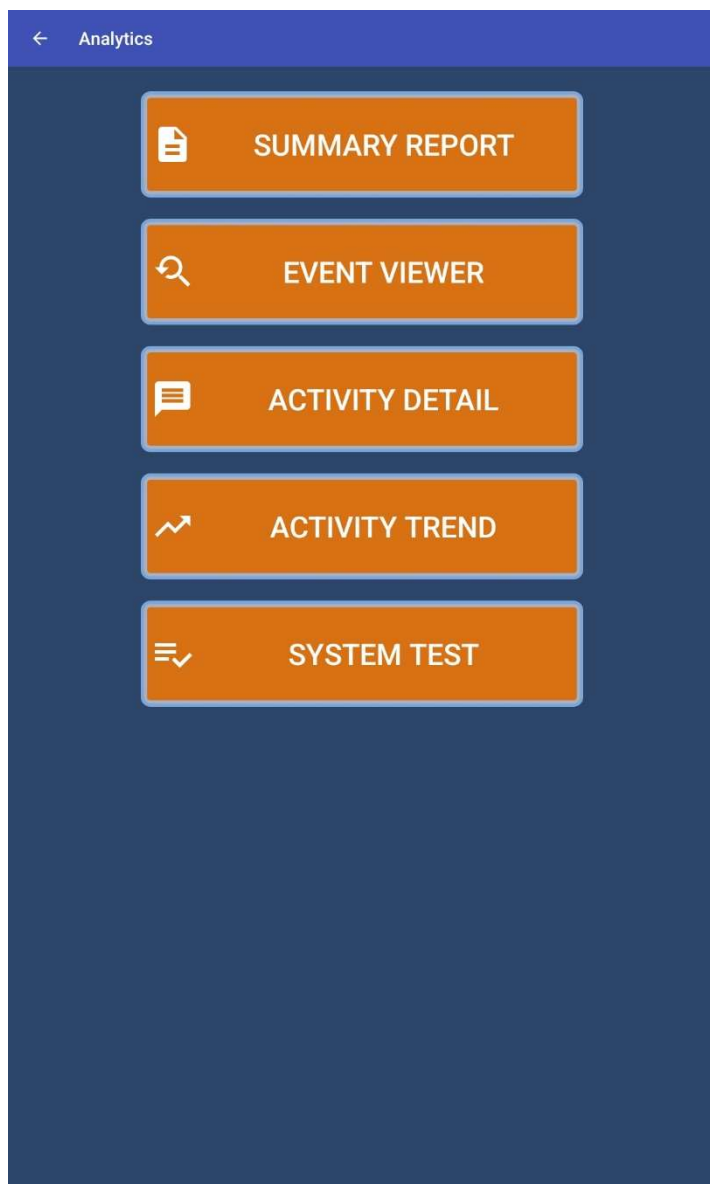
Ferroguard Assure MRI-Safety-Manager includes flow charts to guide you through the patient screening process when using Ferroguard Screener.

Select the applicable chart from the pop-up menu, top right.

To return to Live View, tap the back arrow, top left.



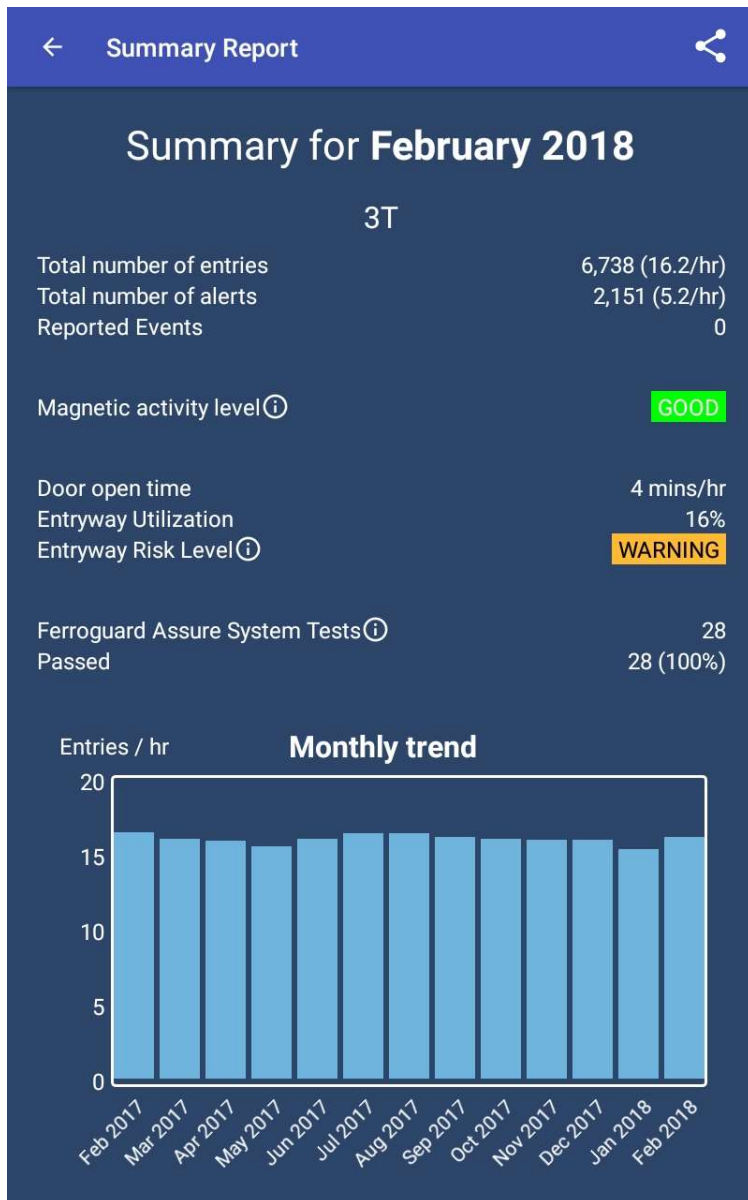
Analytics



The analytics menu provides access to data display and export features...

Summary report

Every month a new Summary Report is generated automatically by MRI-Safety-Manager. Swipe sideways to move between months.



TOTAL NUMBER OF ENTRIES

Total number of Zone-IV entries in the selected month.

TOTAL NUMBER OF ALERTS

Total number of alerts in the selected month.

MAGNETIC ACTIVITY LEVEL

Indicates the duration of extraneous magnetic activity in and around the MRI doorway.

DOOR OPEN TIME

Average number of minutes per hour for which the door was open.

ENTRYWAY UTILIZATION

While the door is open, percentage of time the Zone-IV entrance is actually in use.

ENTRYWAY RISK LEVEL

Indicates the level of risk due to the door being left open while the entrance to Zone-IV is unused.

FERROGUARD ASSURE SYSTEM TESTS

Number of tests performed (and number passed) in the month, including both manually and automatically triggered tests (see section System Test)

MONTHLY TREND

The bar chart shows the average number of entries per hour in each month for the last complete month and twelve preceding months. Tap on the ⓘ info icons for more details.


Summary report export to your computer



To export a Summary Report to your computer via Bluetooth, tap the share icon at the top right of the Summary Report page.

Select the device to which you would like to export the report. Follow on-screen instructions.

The report is exported as an image file.

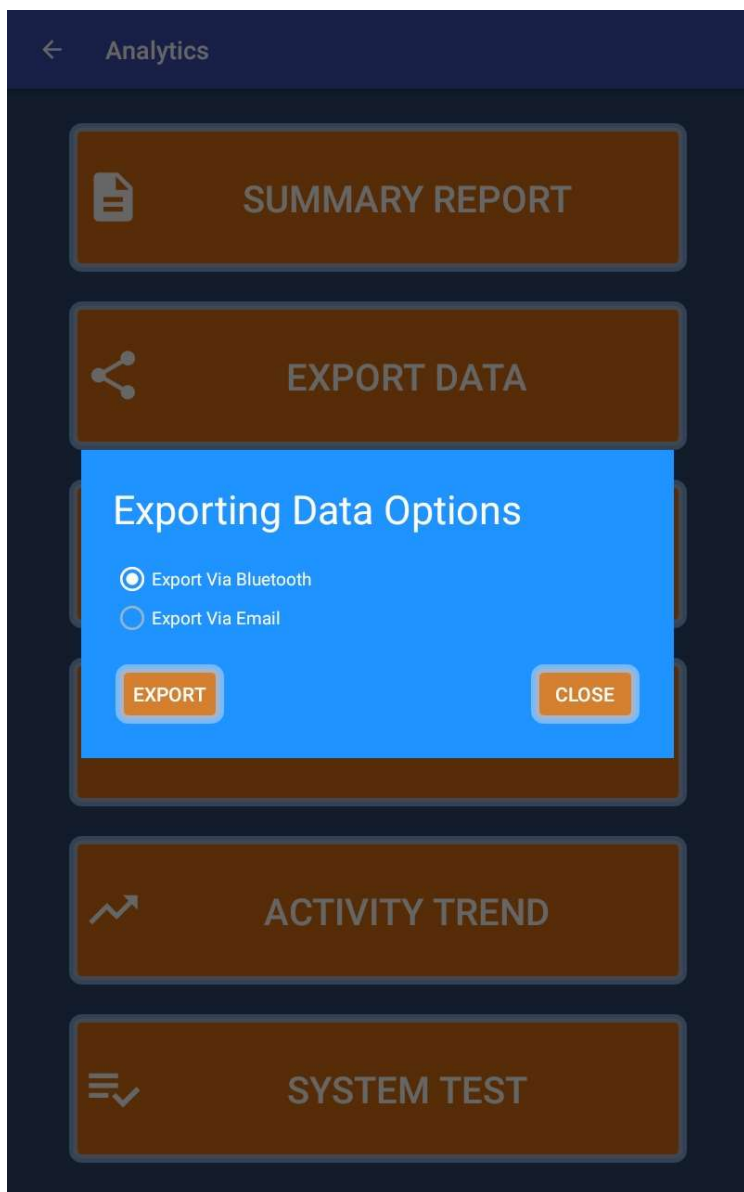
To return to Live View, tap the return arrow,  bottom left.

Export Data

You can export the raw data from MRI-Safety-Manager to your computer. Select the export method (Bluetooth or e-mail) and then tap EXPORT. (Note: e-mail export only available for MRI-SMs connected to a Facility account.)

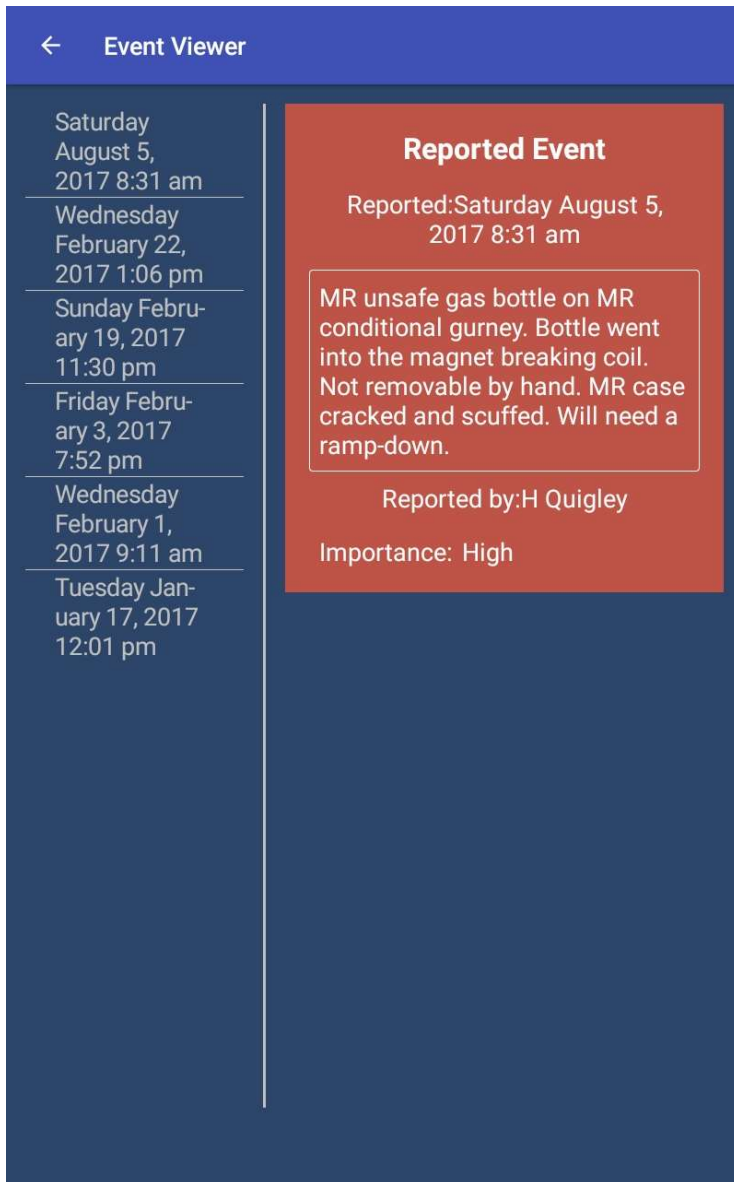
Exported file format

The exported file is in a text format that can be opened directly in Microsoft Excel, other spreadsheet applications, or text editors.



Event Viewer

View individual events that have been logged.



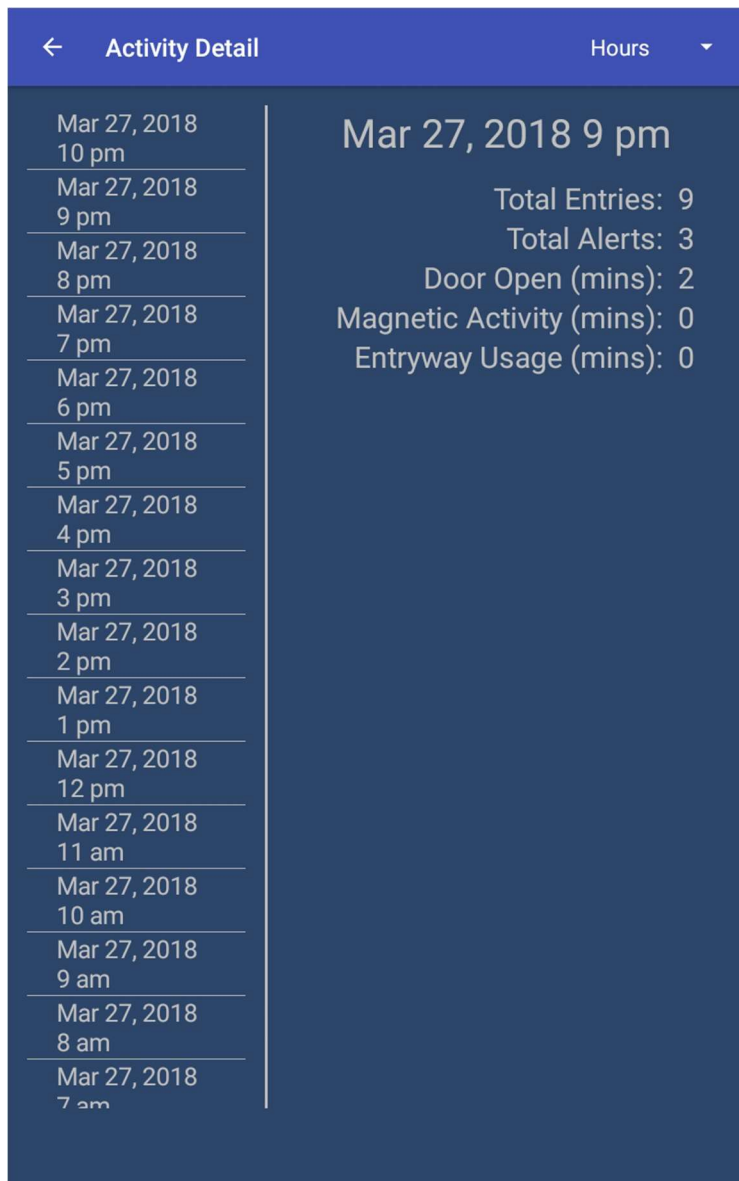
Select the event from the list on the left of the screen.

To return to the Analytics menu, tap the back arrow, top left.

Activity detail

Data is stored hourly, daily and monthly. Select the time period from the drop-down menu, top right.

Select which period to view from the list on the left of the screen.



FIVE METRICS ARE LOGGED:

TOTAL ENTRIES

Total number of Zone-IV entries in the selected period.

TOTAL ALERTS

Total number of audible alerts on the Ferroguard Assure Sensor Units in the selected period.

DOOR OPEN

Average number of minutes per hour for which the door was open.

MAGNETIC ACTIVITY

Total duration (in minutes per hour) of magnetic activity in the Zone-IV entrance, excluding scans.

ENTRYWAY USAGE

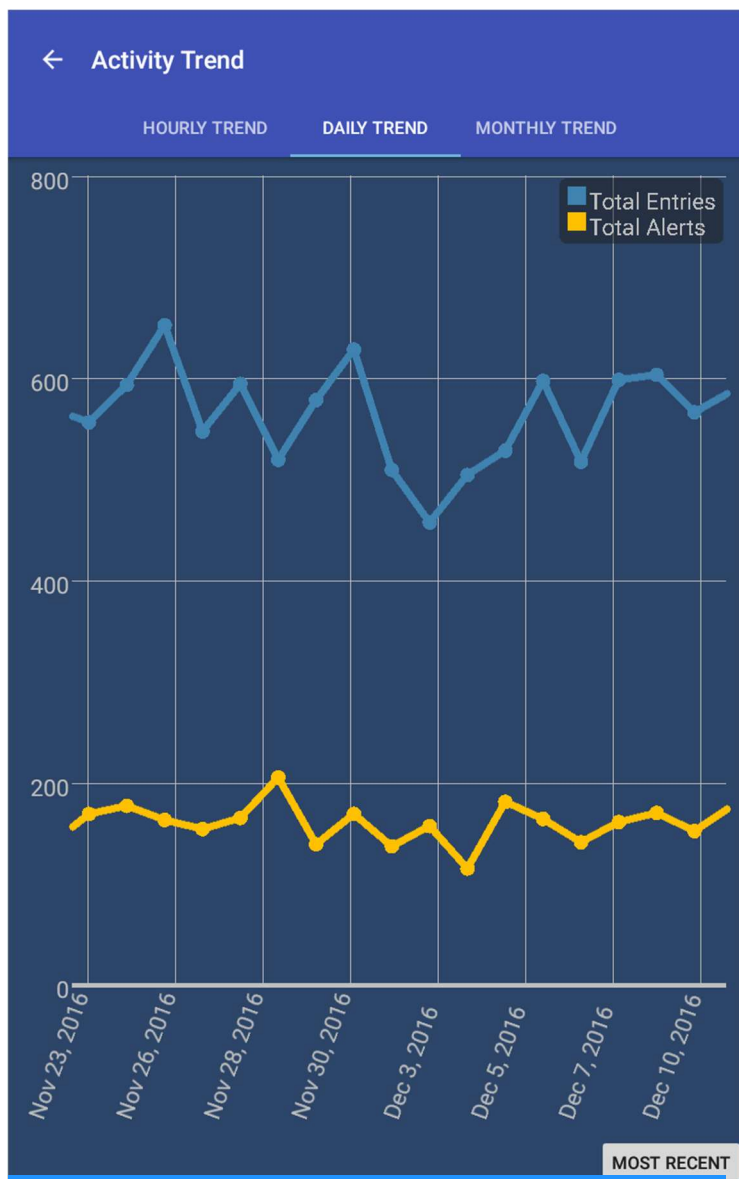
Measure of how much the Zone-IV entrance is actually used while the door is open.

Note: the time periods are listed by their

start time. For example the period labelled "10 am" covers 10 am until 11am.

To return to the Analytics menu, tap the back arrow, top left.

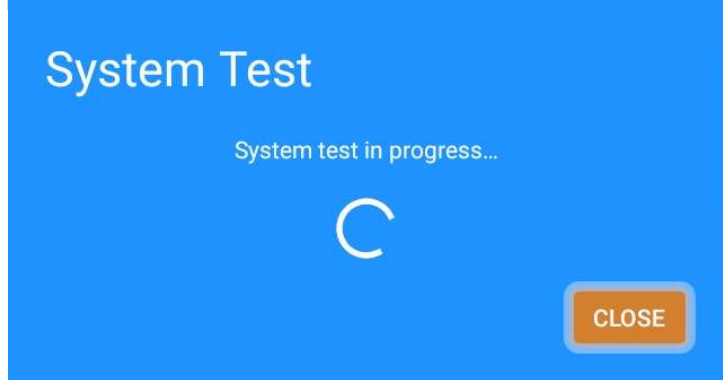
Activity trend



View graphs of hourly, daily and monthly entries and alerts.

Pinch on the graphs to zoom; swipe to scroll left and right.

To return to the Analytics menu, tap the back arrow, top left.



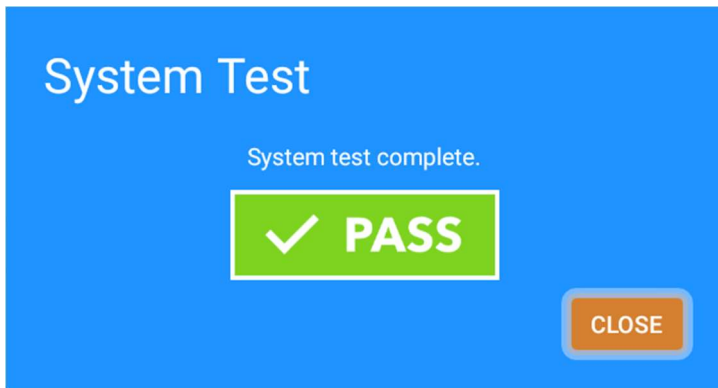
System test

System tests verifies continuity of function between Ferroguard Assure Sensor Units, Hub and MRI-Safety-Manager.

A System Test is automatically carried out at midnight each night.

You can initiate a System Test at any time, by tapping the SYSTEM TEST button in the

Analytics menu.



Summary Reports capture the number of System Tests in a month and their results.

If a System Test fails, contact Metrasens support immediately.

Settings

ENTRYWAY DETAILS

ENTRYWAY NAME

Edit the name of the entryway. The entryway name is used to identify the entryway throughout Metrasens' Safety Suite. (For connected MRI-SMs It can also be edited in the Metrasens' Safety Suite web portal.)

DOOR HANDLE DIRECTION

Set which side of the door the handle is on (left or right), when looking from Zone-III into Zone-IV. This information is used by Live View to display the door correctly.

EVENT REPORTING

Show / hide the REPORT EVENT button on the home screen.

CHANGE PASS-CODE

Change the pass-code used to access the controlled features of MRI-SM.

NETWORK SETTINGS

FACILITY CONNECTION

Review the current Facility name and connection status.

CONFIGURE WI-FI

Connect to the internet via a Wi-Fi network (required to link an MRI-SM to Metrasens' Safety Suite).

CONNECT

Connect MRI-SM to a Facility account in Metrasens' Safety Suite.

SYNC MANUALLY

Sync the MRI-SM with Metrasens' Safety Suite (requires connection to a Facility, via Wi-Fi.)

DEVICE SETTINGS

UPDATE MRI-SM

Check for, and install, software updates.

OS SECURITY PATCH

Check for, and install, security updates for the MRI-SM Operating System (OS).

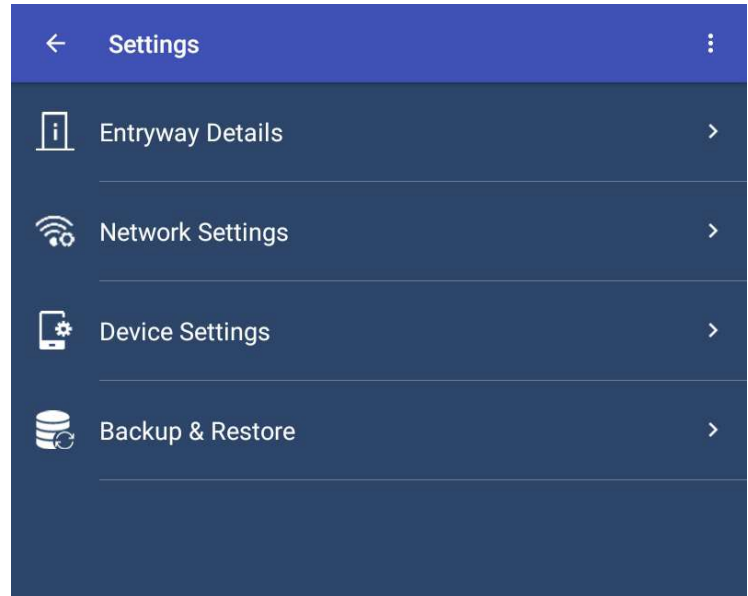
TIME & DATE

Tap the data and time button to edit date and time settings.

Important: Do not change the time format; it must be set to 24hr.

Mechanical adjustment of the MRI-SM position and orientation

Take care not to trap fingers or cables in the adjustable arm when adjusting it.



The MRI-Safety-Manager is mounted on an adjustable arm which allows you to reposition the MRI-SM repeatedly. The degree of resistance of the adjustable arm may be set by adjusting the arm pivot bolts using a hex key.

MAINTENANCE

CLEANING

Clean the MRI-Safety-Manager with an alcohol wipe regularly.

MOUNTING ARM

Check that the mounting arm joints have a suitable level of flexibility. Adjust the pivot bolts if necessary, using a hex key.

CONTROLLED SHUT DOWN

If scheduled maintenance to your facility means that you need to turn Ferroguard MRI-SM off, even for a few seconds, follow these simple steps:

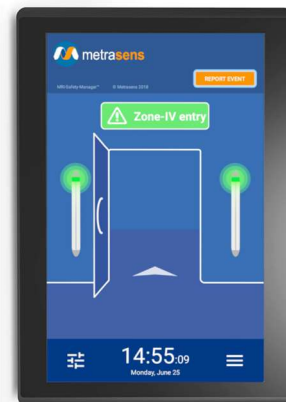
1. Select *Disconnect* in the *Settings* dialog (requires super-user access)
- 2.



White MRI-SM units

Turn off by pressing and holding the button on the right-hand side of the unit.

The button is accessed by inserting a small screwdriver or similar implement into the hole on the right side of the MRI-SM housing



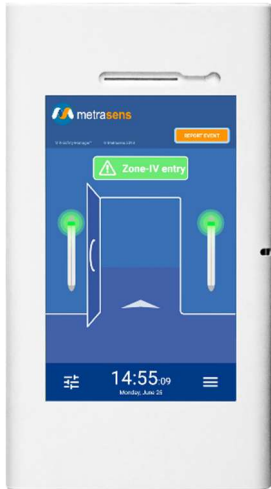
Black MRI-SM units

This unit is powered down by switching off the power at the outlet:

Turn off the power to the MRI-SM unit at the outlet.

Turn off the power to the MRI-SM Adapter at the outlet.

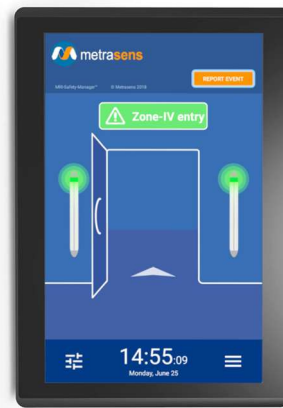
To restart after shutdown



White MRI-SM units

Switch on by pressing and holding the button on the right-hand side of the unit.

The button is accessed by inserting a small screwdriver or similar implement into the hole on the right side of the MRI-SM housing.



Black MRI-SM units

Switch on the outlet power supplying the MRI-SM unit.

Switch on the outlet power supplying the MRI-SM Adapter.



Important note: the MRI-SM cannot collect data or present Live View while the MRI-SM Adapter power from the outlet is off, or while the MRI-SM itself is off. Therefore, it is essential that the MRI-SM power supply is only disconnected from outlet power when absolutely necessary and for as little time as possible.

Troubleshooting

THE MRI-SM SCREEN IS BLANK (BLACK)

- Check that the MRI-SM Adapter is supplied with power from the outlet. If power is not being supplied, turn it on as soon as possible
- Ensure that none of the cables that connect to the MRI-SM Adapter has become detached

If any of these checks reveals a problem that cannot be rectified, contact Metrasens (details below). Otherwise, restart MRI-SM as follows:

1. Turn on the MRI-SM by pressing and holding the button on its right-hand side. The button is accessed by inserting a small screwdriver or similar implement into the hole on the right side of the MRI-SM housing.
2. Wait for the screen on the right to appear
3. Tap the  icon and then the Ferroguard MRI-SM  icon

to restart MRI-SM

POP UP CHARGING ERROR MESSAGE

- The MRISM unit has battery management built into the adaptor. This may cause a message to appear saying '*charging slowly and should use the plug that was supplied with the unit*'. This message can be permanently deleted by ticking the box which will dismiss the pop up.

