

**Technical Manual
ARGUS AM Floor System**

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1 Terms and abbreviations

This chapter describes the terms and abbreviations used in this document.

Term	Abbreviation	Explanation
(Hard) Tag	Tag	Passive component, equipped with a lock to allow attachment to garments, which can be detected by the receiver.
(Paper) Label	Label	Passive component, usually equipped with glue on one side to allow attaching the label to any object, which can be detected by the receiver.
Acoustic Magnetic	AM	58 kHz electronic signals generated by a the AM transceiver.
Antenna	ANT	The mechanical structure (which usually consists of a frame, wires and electronic PCB) to allow proper detection of tags and labels. Also referred to as: pedestal, barrier.
Burst Frequency	Fb	The operating frequency of the TRx.
Device Explorer	Device Explorer	Cross Point Device Explorer Software tool for adjustment of Cross Point devices that are connected to the Cross Point Field Bus structure (RS-485).
EAS	EAS	Electronic Article Surveillance
Foiled Twisted Pair	FTP	The FTP cable is surrounded by an outer foil shield.
I/O	I/O	Digital Input/Output
Printed Circuit Board	PCB	The electronic board.
Receiver	Rx	Electronic device capable of receiving AM signals.
Transceiver	TRx	Electronic device capable of transmitting and receiving AM signals, sharing the same electronic circuitry and housing. Also referred to as mono-antenna.
Unshielded Twisted Pair	UTP	Common network cable.

2 Introduction

The ARGUS AM Floor System is a state-of-the-art anti-shoplifting system, which is completely integrated into the floor, making it invisible and which maximizes shopper experience.

2.1 Restrictions and limitations

The following restrictions and limitations must be considered:

2.1.1 Software restrictions

The ARGUS AM Floor Systems can be adjusted with Cross Point's Device Explorer software.

During setup of Device Explorer you are required to specify your dealer login credentials in order to be able to use the Device Explorer software. If you do not have these dealer login credentials yet then contact Cross Point to obtain an account.

2.1.2 Detection distances

Any specified detection distances are maximum values, unless specified otherwise. Depending on environmental noise, these detection distances might not be achieved. See chapter 3 for more details on potential noise sources and installation guidelines.

3 General AM and EAS issues

This chapter covers the various issues related to Acoustic Magnetic systems and Electronic Article Surveillance systems in general, like:

- Noise sources
- Installation guidelines

3.1 Noise sources

Listed below are various noise sources that might affect the performance of any EAS system. It is strongly advised to either eliminate these noise sources (as far as possible) or maintain the largest possible distance to these noise sources.

The following devices can create or absorb AM noise signals which can reduce the performance of an EAS system:

- AM systems installed in other shops (even if they are installed as far as 100 m or more away from your store).
- An active laptop. The backlight in the screen can generate a lot of noise which is detected by the EAS system and can reduce the performance dramatically. Make sure to keep laptop computers at least 3 meters away from the antennas.
- (Moving) Objects containing metal, like sliding and revolving doors, elevators, escalators, roller shutters, frames, etc.
- Other electronic devices like LCD and LED screens, cash registers, electric motors, transformers, etc.
- Power cables, both low voltage and high voltage.
- Lights (flashing, fluorescent, halogen, gas-discharge, High Intensity Discharge, etc.)
- Metal scan systems installed in close vicinity. Cross Point's Metal Scan operates around 19 kHz in channel 0 and has a second harmonic frequency around 58 kHz.
- Any other electronic device that operates around 58 kHz or produces harmonic frequencies around 58 kHz.

4 Installation requirements

Listed below are EAS installation requirements to ensure a properly installed and functioning system. Not following these requirements might result in lower performance of the EAS system.

4.1 Installer/contractor

1. Shall have electrical work comply with the latest national electrical code, national fire code and all applicable local codes and ordinances.
2. Shall coordinate all work with other trades to avoid interference.
3. Shall verify existing site conditions and coordinate with the owner's representative and appropriate utilities as required.
4. Shall obtain copies of all related plans, specifications, shop drawings and addenda to schedule and coordinate related work.
5. Shall thoroughly review the project to ensure that all work meets or exceeds the above requirements.



Do not install this product in hazardous areas where highly combustible or explosive products are stored or used.



Risk of electric shock! If the equipment must be left unattended during installation, turn off the power supply or properly cover high voltage components, so that no unauthorized person has access to hazardous voltages.

4.2 Antenna placement and cabling

1. To make the system concealed, the antennas must be integrated in the floor of the entrance/exit. To do this in an existing floor, a cavity needs to be created by removing concrete over an area of approx. 75 cm x 190 cm and a preferred depth of 11 cm. In case of a new floor, the coils need to be properly placed before concrete is poured.



Any work on the floor must be carried out by a certified installer/contractor. The stability and structural integrity of the floor may not be compromised in any way by cutting or removing rebar, or otherwise. Contractors must obtain approval for all proposed structural changes. All structural changes must meet national and local requirements.

2. LED display or other TV screens, switching power supplies or neon displays must be kept at least 2m away from the antenna coils.
3. Maximum cable length between the antennas and the Control Unit is 10m. Do not extend this cable, even with the same type of cable. If the cable is cut too short, do not attempt to rejoin the two ends since this will degrade the shielding performance of the cable.



Risk of electric shock! Conduit is required for the cable between the antenna and the Control Unit.



To avoid adding significant time and cost to the in-floor installation, check the detection performance and label detection height at the exact installation site. Do this before cutting the floor and do this again before pouring the concrete!

4. Install the antennas inside the store as close to the entrance/exit doors as possible, taking enough distance to metal structures and potential noise sources into consideration.
5. Use the supplied connector piece to create the required distance between the two transceiver coils.
6. Tiles are placed underneath the antennas and the antennas are elevated using spacers to improve performance:
 - a. Tiles are placed at the bottom of the cavity in the screed. No metal rebar or wire mesh may be present within 10 cm of the sides of the antennas.
 - b. Antennas are typically between 3 cm and 5 cm below the surface of the screed for floors subject to normal duty. Floors subject to light duty (foot traffic and shopping trolleys only) high psi mortar/concrete thickness above the antennas and conduit may be as little as 1 cm. Make sure to consult this with a certified installer/contractor.
7. For conduit runs use rigid or plastic conduit. Some local codes require rigid conduit instead of plastic for concrete burial.
8. Use a separate conduit for each antenna. Conduit runs must be a minimum of 20 cm from the antennas and may not cross above or below the antennas. It must be routed around the perimeter.
9. All conduit fittings must be rain/concrete tight. Wrap threads with four turns of Teflon pipe tape.
10. Minimize underground conduit couplings to prevent moisture intrusion.
11. Avoid walking on antenna cables during installation.
12. Use non-metallic, non-shrink mortar/concrete. Make sure to consult this with a certified installer/contractor.
13. Mortar cure time depends on the mix and temperature of the mortar ingredients.

4.3 Control Unit

The ARGUS AM Floor System consists of a Control Unit to which two external coils must be connected. See chapter 10.4 for more details.

1. The Control Unit needs to be placed next to the entrance in such a way that store personnel can see the visual alarm and hear the audio alarm notifications.
2. Antenna cables must be connected properly to the designated antenna connectors on the Control Unit.



Risk of electric shock! Always switch the power supply off before connecting or disconnecting antenna cables to the controller board.

3. Use conduits or cable trays to run the cables up or down the wall into the Control Unit.

4.4 Power supply

The ARGUS AM Floor System is powered with an external power supply. See chapter 9 for more details.

1. Install the power supply at least 1m away from the antennas.
2. Do not run the power supply cable under or over the antennas. Keep the cable at least 20 cm away from the antennas.

4.5 Post installation information

Instruct store personnel about the following after the system has been installed and is fully functional:

1. Larger metal objects may not be placed above the antennas.
2. Secured merchandise may not be placed within 2 m distance of the antennas.

4.6 Implanted medical devices

This ARGUS AM Floor System complies with all safety standards. However, visitors with implanted electronic medical devices may ask if the store has an anti-theft system and if so, its location. To help these people, do the following:

1. Visitors should not linger close to the antennas, but only pass over them while entering/leaving the store.
2. Install the antennas as close as possible near the entrance/exit, so visitors are encouraged to pass over them quickly while entering or leaving the store. This reduces the time they are in the actual energy field.
3. Make sure that no fixtures, equipment, amusements and other signage that can attract visitors to them is placed close to the antennas.

5 Equipment and tools

The following equipment and tools are advised to use when installing and tuning the ARGUS AM Floor System.

5.1 General installation tools

The general tools required for installation of an EAS system (drills, screwdrivers, cutters, etc.) are not described in detail.

5.2 Laptop computer

To properly adjust the ARGUS AM Floor System through Cross Point's software, it is strongly recommended to use a laptop computer.

The following minimal requirements are set for the laptop:

- Intel 1.3GHz or faster processor
- Microsoft Windows Vista with Service Pack 2 (32 bit and 64 bit)
- Microsoft Windows 7 with Service Pack 1 (32 bit and 64 bit)
- Microsoft .NET Framework 3.5 Service Pack 1
- 512MB of RAM (1024MB recommended)
- 50MB of available hard-disk space for Device Explorer
- Minimal screen resolution 1024x768 (recommended 1600x1200)
- Video hardware acceleration

5.3 Software

The ARGUS AM Floor System can be connected to the **Cross Point Field Bus** (see chapter 8.2, page 17 for further details on the Field bus structure).

To be able to adjust and configure the ARGUS AM Floor System, **Cross Point Device Explorer** is required.

Please refer to the *Cross Point Device Explorer User Manual* for further details on all features and usage of this software.

6 AM operating principle

The NEXUS AM operates on the pulse-listening principle. Using the zero crossing of the 50 Hz (or 60 Hz) mains frequency as a trigger, a short burst of 58kHz signal is transmitted and a receiver window is 'opened' after the transmission burst has stopped.

If a tag was present within detection range during the transmission burst, the resonance of this tag will be detected in the receiver window and an alarm will be triggered.

A single 50 Hz (or 60 Hz) mains frequency cycle is divided into three phases; phase A, B and C. Each phase covers 1/3 of the 50 Hz cycle duration.

Figure 1 shows the AM operating principle (at 50Hz, with a default delay of 200µs) during one 50Hz cycle.

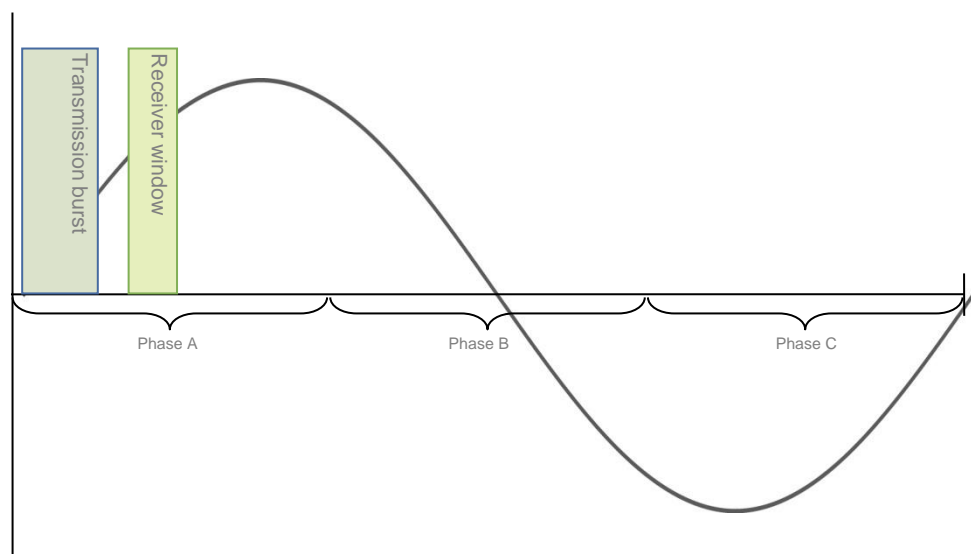


Figure 1: AM operating principle

6.1 Synchronization principle

When multiple AM systems are installed in each other's vicinity, it's very important to properly synchronize the transmission burst and receiver windows for all systems involved. If systems are not properly synchronized they will create false alarms and have poor detection! Keep in mind that AM signals, when compared to other EAS technologies, can "travel" quite far (up to 100m or more) because of their longer wavelength.

Figure 2 shows two AM systems that are not properly synchronized.

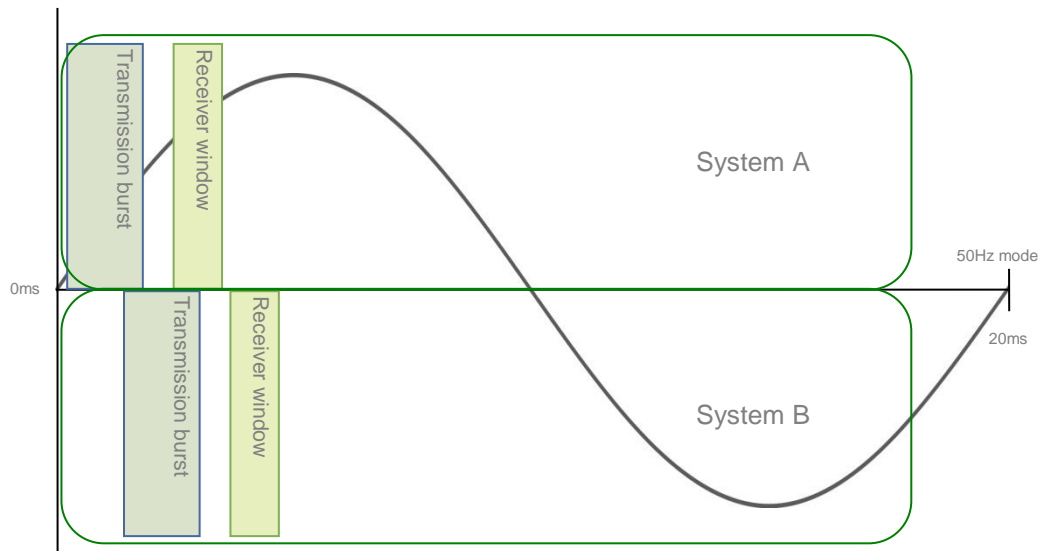


Figure 2: Two AM systems NOT synchronized

The transmission burst of system B starts later than the burst of system A, resulting in the fact that system A is receiving the transmission burst of system B in its receiver window. This might create false alarms and poor detection on system A, where system B will function properly as the transmission burst of system A is not affecting the receiver window of system B.

This problem can be solved by making sure that both systems transmit and receive at the same moment, which can be realized by changing the delay time for one of the two systems.

Example:

System A has currently a delay time of 0.2ms and system B a delay time of 1.4ms. The delay time of system B needs to be corrected to the delay time of system A (or vice versa), so their mutual transmission burst and detection windows will overlap each other (see Figure 3). This will result in both systems working properly without interference (see Figure 4).

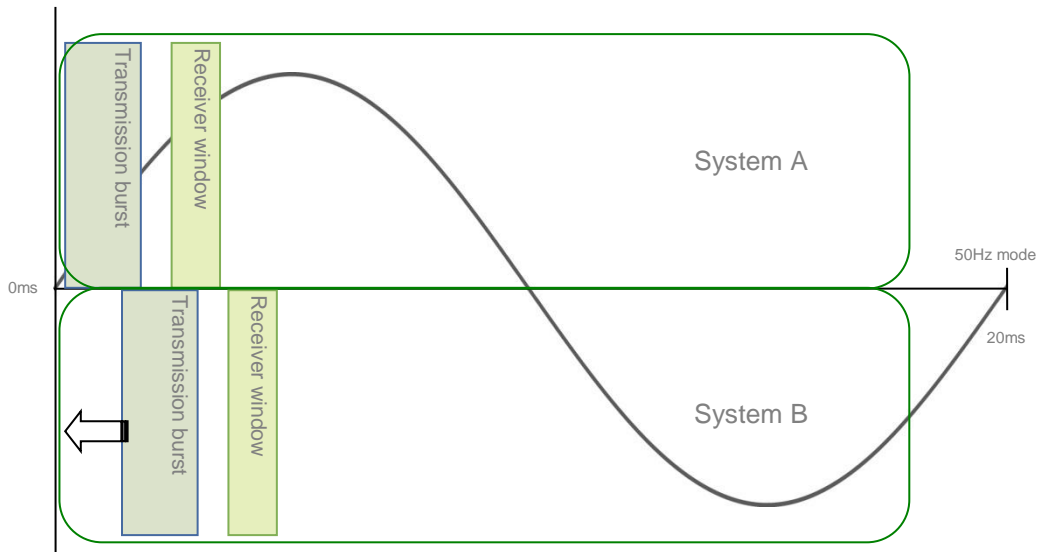


Figure 3: Correcting the delay time of system B

Figure 4 shows two AM systems that are properly synchronized.

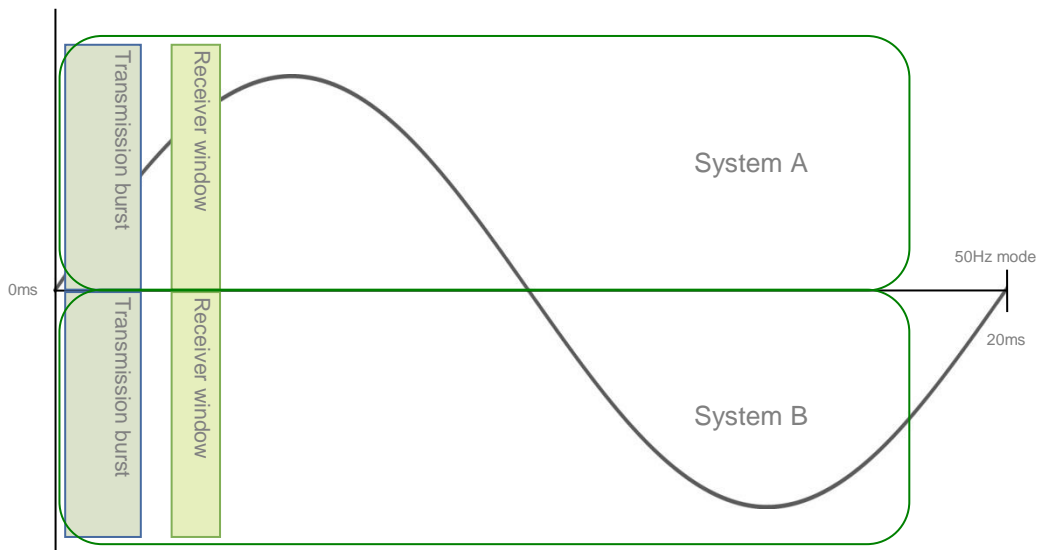


Figure 4: Two AM systems properly synchronized

The synchronization can be performed by making use of Cross Point's software. The exact synchronization procedures are described in chapter 13.5.7.2.

7 Installing the antennas

To create a concealed system, the antenna must be integrated in the floor of the entrance/exit. To do this in an existing floor, a cavity needs to be created by removing concrete. In case of a new floor, the antenna and tiles need to be properly placed before concrete is poured.

7.1 Excavation of the floor

When installing the basic ARGUS AM Floor System in an existing floor, an area of the screed must be excavated to create space for the antenna and tiles. Concrete needs to be removed over an area of approx. 75 cm x 190 cm and a preferred depth of 11 cm. Position the coils with the cables running towards the middle to keep the total cable length for both coils the same as much as possible.

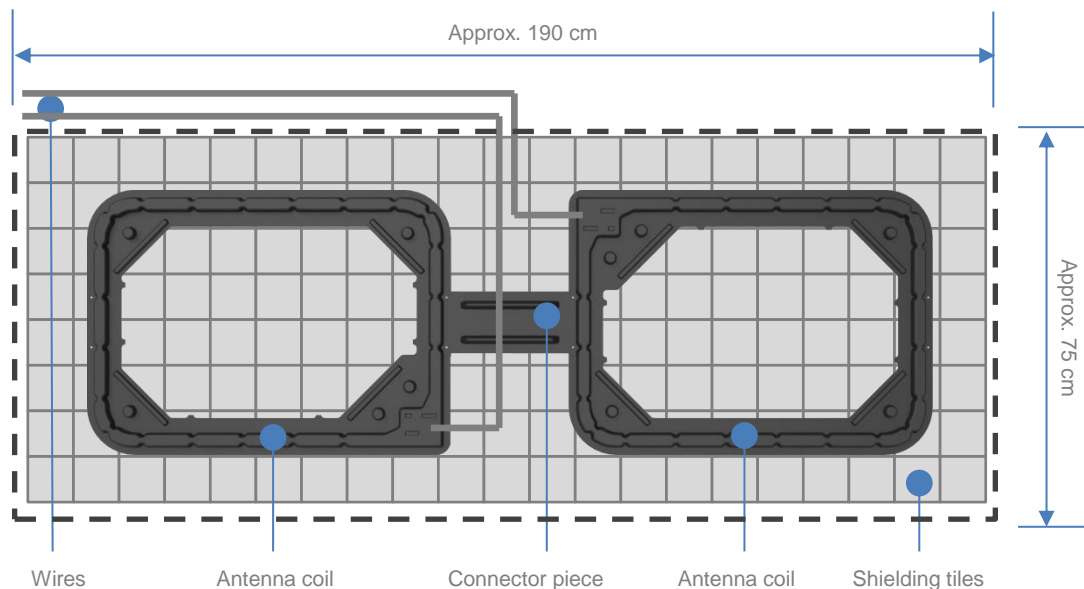


Figure 5: Coils and tiles placement

7.2 Elevated antenna

In case metal rebar or wire mesh is less than 21 cm underneath the antenna, a bed of tiles must be placed under the antenna. The antenna itself is then placed on the tiles using plastic spacers. This will create enough distance between the antenna and the tiles to enable proper performance. Glue the spacers into the designated holes of the coil housing using for example High-tack kit.

7.3 Bed of shielding tiles

The bed of shielding tiles must be

- Placed on a flat surface so all tiles are positioned level with each other
- Placed directly next to each other without any spacing between the tiles
- Glued with for example High-tack kit to prevent shifting of the tiles
- Placed in such a way that on all sides of the antenna a full row of tiles overlaps the antenna coils.

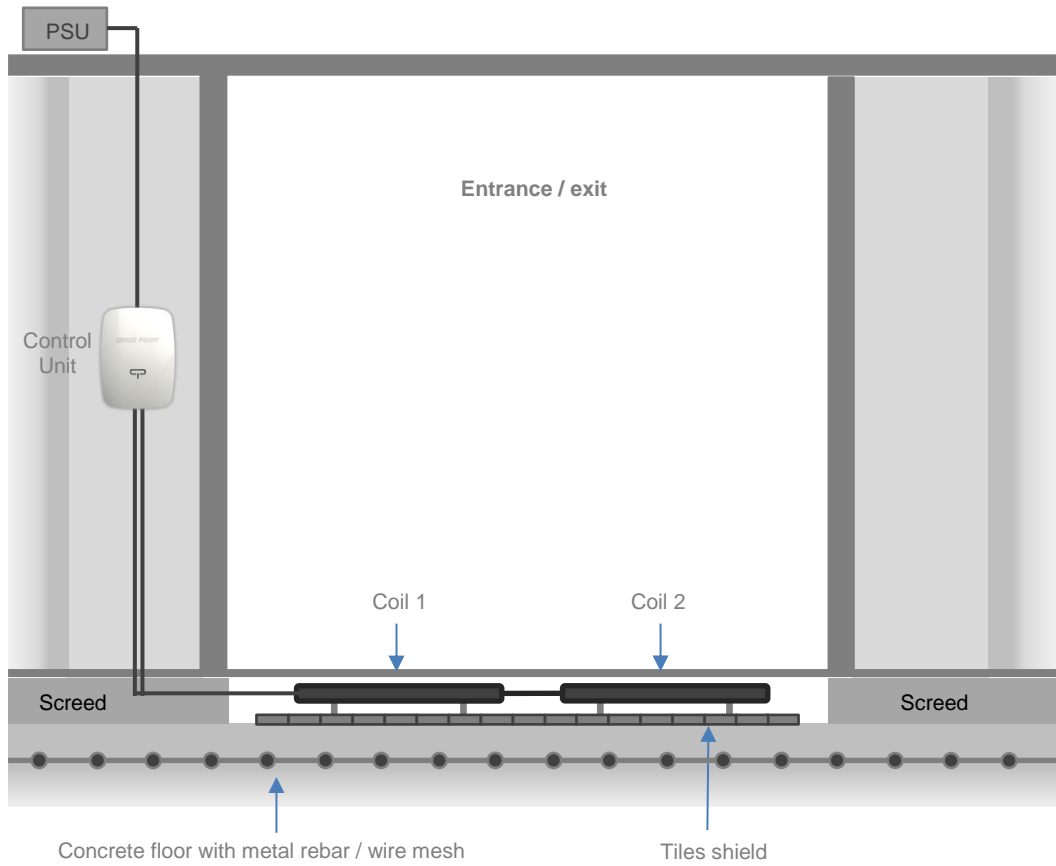


Figure 6: Exit view with the transceiver antenna and tiles shield in the floor

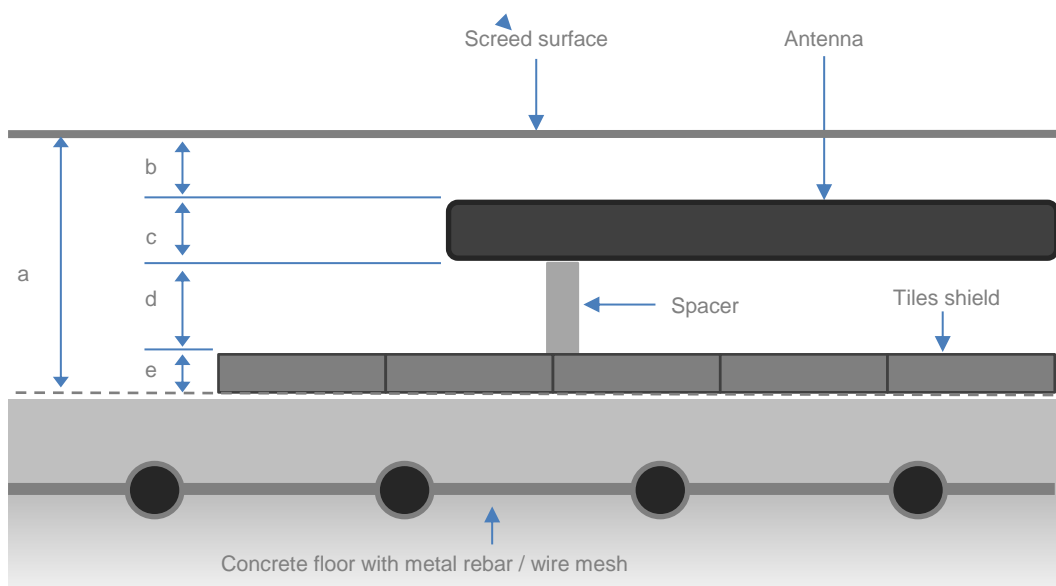


Figure 7: Close-up side-view of antenna and tiles in the floor

Ref.	Description	Dimension
a	Excavation depth	Maximum 11 cm
b	Floor surface to antenna	3 – 5 cm for floors subject to normal duty. 1 – 2 cm for floors subject to light duty and with high fiber-enforced concrete.
c	Antenna thickness	2 cm
d	Spacing height	To obtain the best performance, as much distance as possible must be created between the antenna and the tiles underneath the antenna using non-metallic spacers.
e	Tile thickness	8 mm

Table 1: Dimensions of the various components in Figure 7

8 Connections

In the following chapters the connections between the ARGUS AM Control Unit and the CrossCONNECT Access Point are described.

Furthermore the Printed Circuit Board (PCB) of the Control Unit and the manual adjustments are explained.

8.1 How to access the electronic board

In order to be able to access the electronic board, the control unit lid needs to be removed. This can be done by untightening two screws; one located at the top and one located at the bottom of the control unit.



Figure 8: Position of screws for removing the lid

8.2 Field Bus connections

Cross Point devices are interconnected through the Field Bus by using preferably FTP cables, because FTP has an advantage to eliminate noise because of the extra shielding.



The Cross Point Field Bus requires the devices to be connected in a “daisy chain” connection. A “star” network is not allowed and will result in poor or no communication between the devices and the Access Point!

Each ARGUS AM Control Unit is configured with a unique address, which is factory set and cannot be changed. A PC/laptop enables local maintenance of the Control Unit by using the CrossCONNECT Access Point and Device Explorer software.

When the Field Bus is connected to the Access Point and the Access Point is connected to a Local Area Network (LAN), local servicing and data retrieval is possible. When the Access Point is connected to the internet, subscription based remote service and data retrieval will be available.

8.2.1 Bus connections with laptop

Figure 9 shows the Field Bus structure between the Access Point and the ARGUS AM Floor System.

Connecting the Access Point to a laptop, allows on-site maintenance through the Device Explorer software.

See chapter 13 for further information on how to use Device Explorer software.

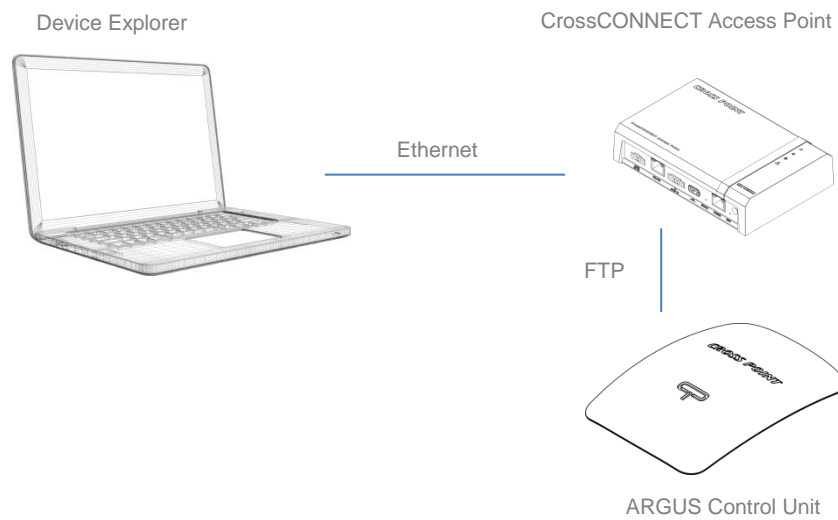


Figure 9: Field Bus structure

The Field bus supports a maximum of 127 connected devices.

8.3 Field Bus termination

For the Field Bus to operate properly, the bus needs to be terminated on the first device and the last device in the bus.

When a device is either the first or the last device in the Field Bus, then the bus needs to be terminated on that device.

In the example in **Figure 10** the bus needs to be terminated on the Access Point (which is automatically done by the Access Point itself) and on ACU 3.

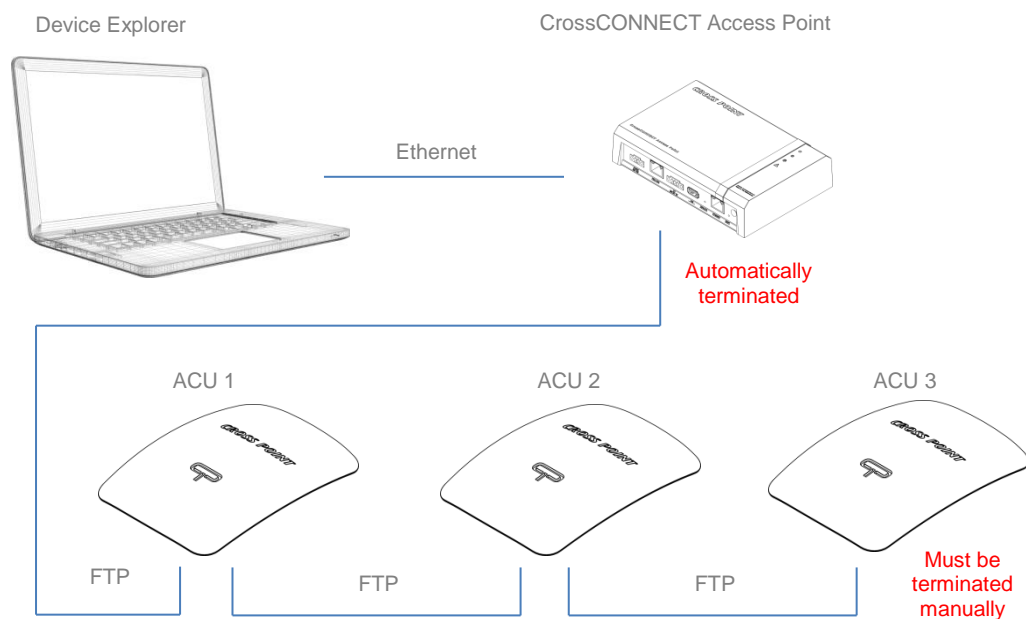


Figure 10: Field Bus termination example

To terminate the Field bus on the Control Unit, the switch TERM must be put in the ON position.

9 Power supply

The next sections contain information on the power supply unit. Please read the supplied information carefully prior to connecting the power supply, as it contains important information on proper usage of the power supply unit.

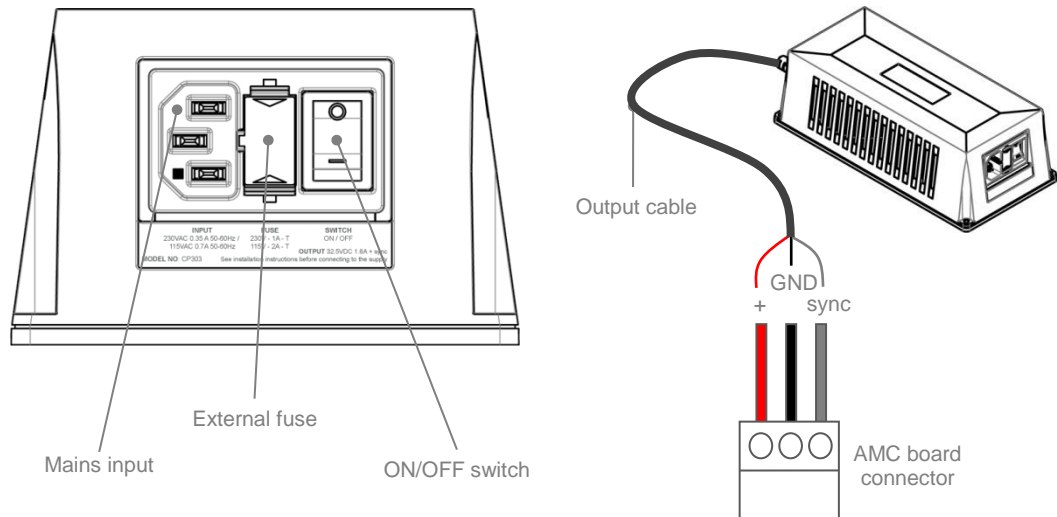


Figure 11: AM power supply unit

Table 2 shows the color schemes for the output cable.

Wire coloring variations for output cable

32.5VDC	Red
GND	Black
SYNC	Grey

Table 2: Output cable color scheme



The mains socket-outlet shall be installed near the power supply unit and shall be easy accessible.

9.1 Power supply specifications

Table 3 shows the specifications of the AM Power Supply.

Technical specifications

Dimensions (L x W x H)	227 x 108 x 71 mm
Weight	2.1 kg
Input voltage, frequency & current	230VAC 50-60Hz 500mA or 115VAC 50-60Hz 1A
Mains inlet type	Fused AC IEC with ON/OFF switch
Mains lead	Euro Schuko to IEC, 1.5m length
Output	32.5VDC 1.6A + synchronization signal
Output cable	3x1mm ² , fixed, 5m length. This cable can be extended to 15m using a 3x1mm ² cable or thicker.
Temperature range	0 – 50°C
External fuse	230VAC – 1A slow
Replace when changing mains voltage!	115VAC – 2A slow

Table 3: Power supply specifications

9.2 Switching to a different mains voltage

The power supply supports 2 mains voltages; 230VAC (default setting) and 115VAC.

By default the power supply is set to 230VAC mains input, but if required, the mains input can be switched to 115VAC. Follow the next steps to switch to a different mains voltage:

1. Disconnect from mains power and carefully open the power supply housing
2. Locate the internal switch and switch it to the required position
3. Replace the external fuse with the correct value (see Table 3)
4. Carefully close the power supply housing

9.3 Power supply restrictions

This power supply has the following restrictions which must be respected carefully in order to warrant the safety of the product and user:

- Only to be used in combination with Cross Point AM systems
- For indoor use only
- Disconnect from mains power before opening the housing
- Do not cover the ventilation holes of the housing

- Leave at least 10cm of free space around the PSU for ventilation purposes
- Allow for free air flow around the PSU
- Local laws and regulations must be respected when installing and servicing this device
- Minimum distance between PSU and Cross Point AM systems is 1m.



It is prohibited to connect more than one ARGUS AM Floor System unit to a power supply. Use a separate power supply for each ARGUS AM Floor System unit!

10 Configurations

Depending on the width of the entrance that needs to be secured, one or more ARGUS systems may need to be combined with extra receiver coils. The images below show an indication of the maximum entrance widths that can be secured with specific configurations.

10.1 Basic configuration

The basic configuration consists of one Control Unit and 2 transceiver (TRx) coils. These 2 transceiver coils form 1 transceiver antenna.

The distance between the 2 TRx coils must be 30cm. The short connector piece, which is supplied with the antenna coil, must be removed from the antenna and must be used to create this distance and to interconnect the two TRx coil housings resulting in a more stable assembly.

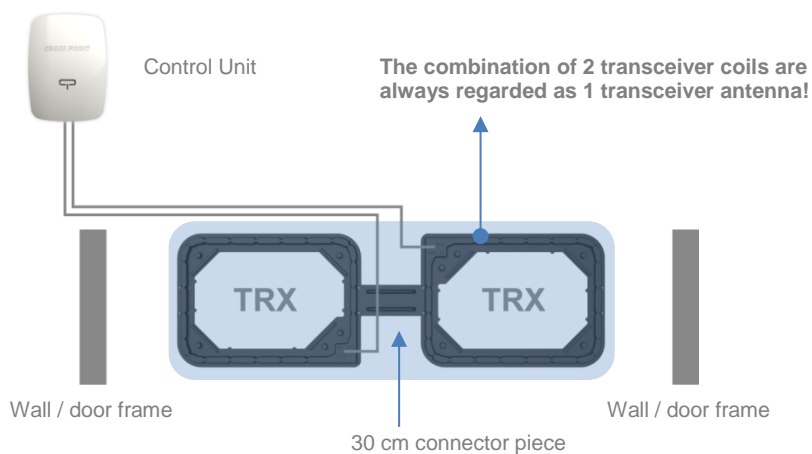


Figure 12: Basic configuration with one transceiver antenna (consisting of 2 TRx coils)

The entrance width that can be secured with such a basic configuration depends on whether DR labels or OSTR A F25 tags are used. When OSTR A F25 tags are used, the secured entrance width will be more. See the next sections for configuration examples for different entrance widths, specified for DR labels and OSTR A F25 hard tags.



Always connect two TRx coils and they must be placed next to each using the short connector piece to interconnect the two TRx coils.

It is not possible to connect only one TRx coil! It is also not possible to connect only 1 TRx and 1 Rx coil.

10.2 Rules for extended configurations

The following rules apply when installing multiple control units and antennas:

- A receiver antenna is always placed at 10 cm distance from a transceiver antenna when these antennas are connected to the same control unit
- A receiver antenna can be placed at 10 to 35 cm (for DR labels) or 10 to 65 cm (for OSTR A F25 tags) distance from a transceiver antenna when they are not connected to the same control unit.
- The minimum distance between two transceiver antennas is 90 cm when they are not connected to the same control unit.

10.3 Configuration examples for DR labels

Taking the rules as described in section 4 into consideration, the following configurations can be defined for use with **DR labels** for various entrance widths.

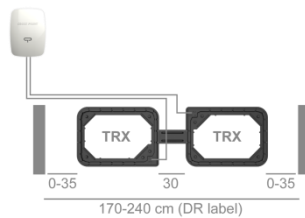


Figure 13: Basic configuration; 1 control unit + 2 TRx coils – max. 240 cm entrance width

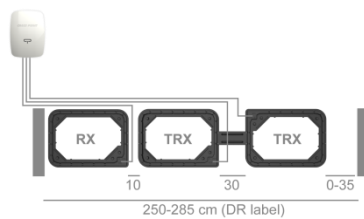


Figure 14: Basic configuration + 1 Rx coil – max. 285 cm entrance width

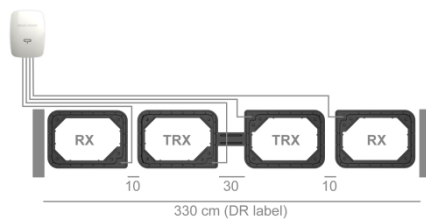


Figure 15: Basic configuration + 2 Rx coils – 330 cm entrance width

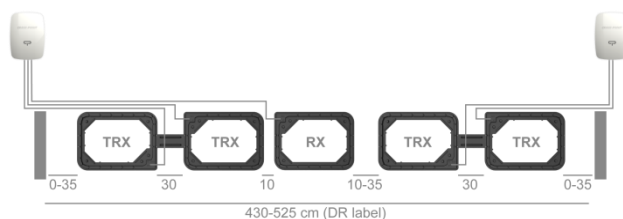


Figure 16: Extended configuration; 2 control units – max. 525 cm entrance width

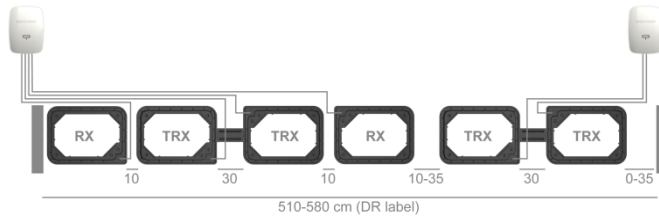


Figure 17: Extended configuration; 2 control units – max. 580 cm entrance width

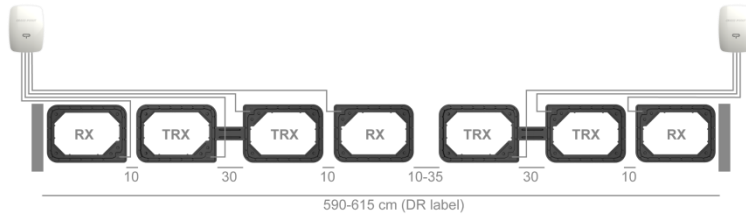


Figure 18: Extended configuration; 2 control units – max. 615 cm entrance width

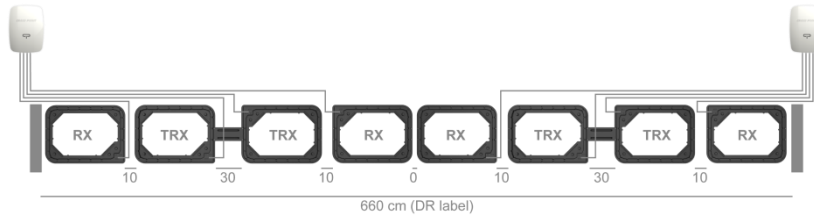


Figure 19: Extended configuration; 2 control units – max. 660 cm entrance width

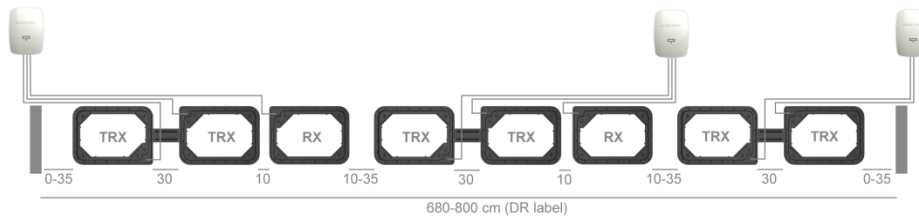


Figure 20: Extended configuration; 3 control units – max. 800 cm entrance width

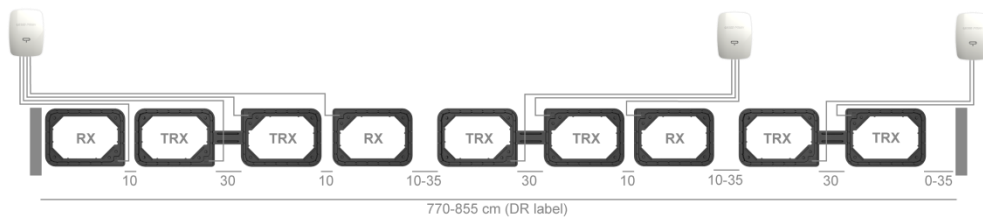


Figure 21: Extended configuration; 3 control units – max. 855 cm entrance width

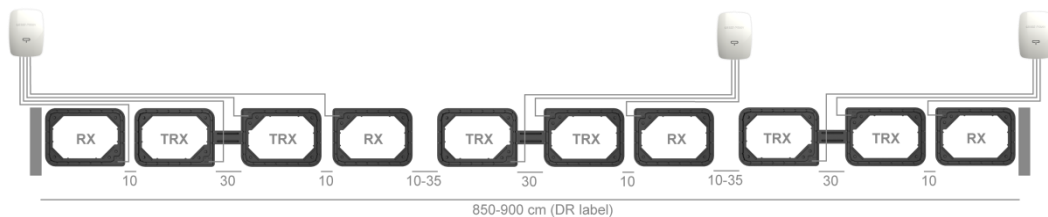


Figure 22: Extended configuration; 3 control units – max. 900 cm entrance width

Please contact us at support@crosspoint.nl in case you need any help in creating configurations for different entrance widths.

10.4 Configuration examples for OSTR A F25 hard tags

Taking the rules as described in section 4 into consideration, the following configurations can be defined for use with **OSTRA F25 tags** for various entrance widths.

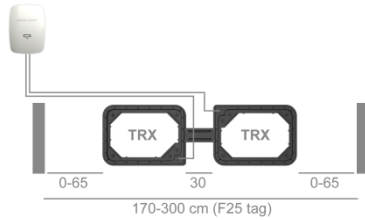


Figure 23: Basic configuration; 1 Control Unit + 2 TRx coils – max. 300 cm entrance width

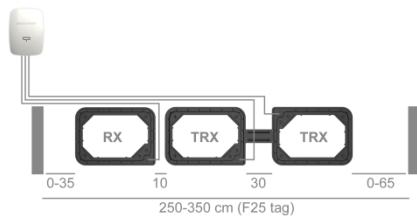


Figure 24: Basic configuration + 1 Rx coil – max. 350 cm entrance width

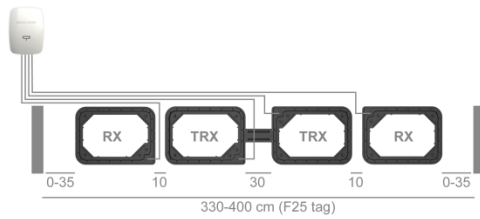


Figure 25: Basic configuration + 2 Rx coils – max. 400 cm entrance width

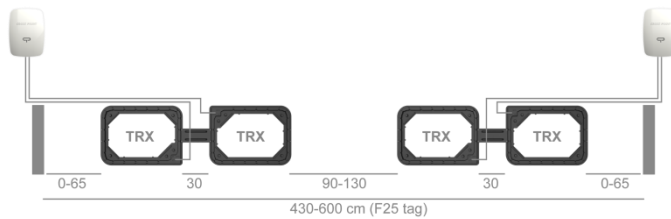


Figure 26: Extended configuration; 2 Control Units – max. 600 cm entrance width

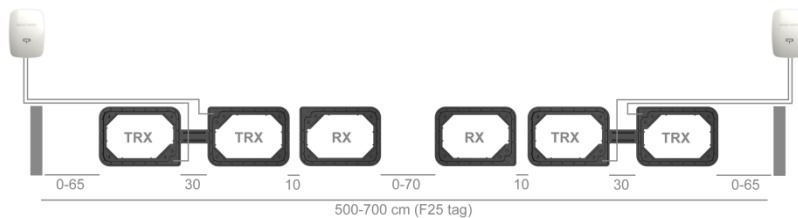


Figure 27: Extended configuration; 2 Control Units – max. 700 cm entrance width

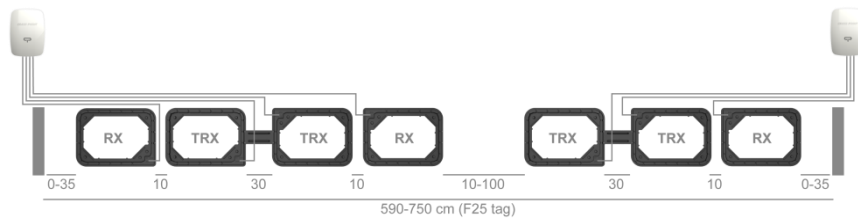


Figure 28: Extended configuration; 2 Control Units – max. 750 cm entrance width

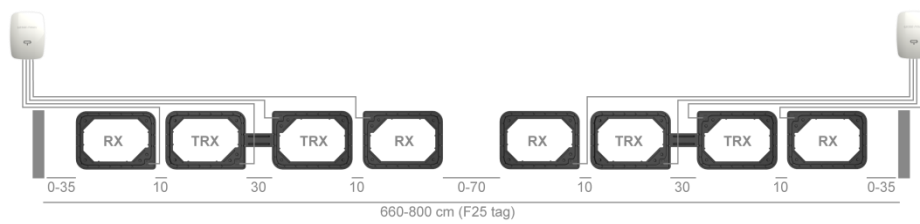


Figure 29: Extended configuration; 2 Control Units – max. 800 cm entrance width

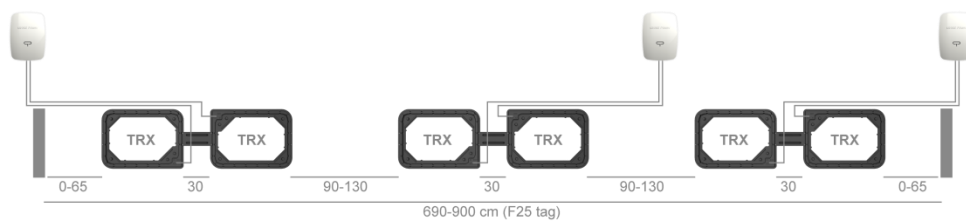


Figure 30: Extended configuration; 3 Control Units – max. 900 cm entrance width

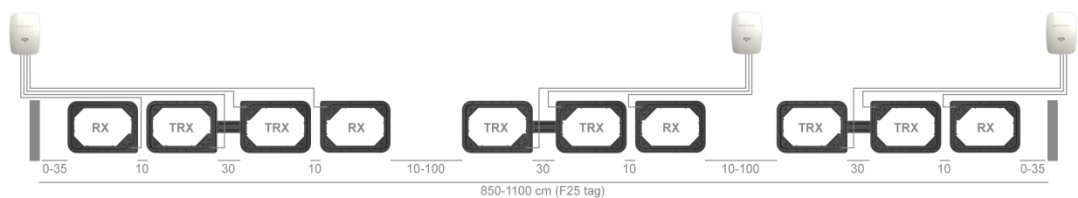


Figure 31: Extended configuration; 3 Control Units – max. 1100 cm entrance width

Please contact us at support@crosspoint.nl in case you need any help in creating configurations for different entrance widths.

11 The ARGUS AM Control Unit

The ARGUS AM Floor System is an AM transceiver, designed to operate at 58 kHz.

11.1 Control Unit Printed Circuit Board

Figure 32 shows the Control Unit PCB and its available components.

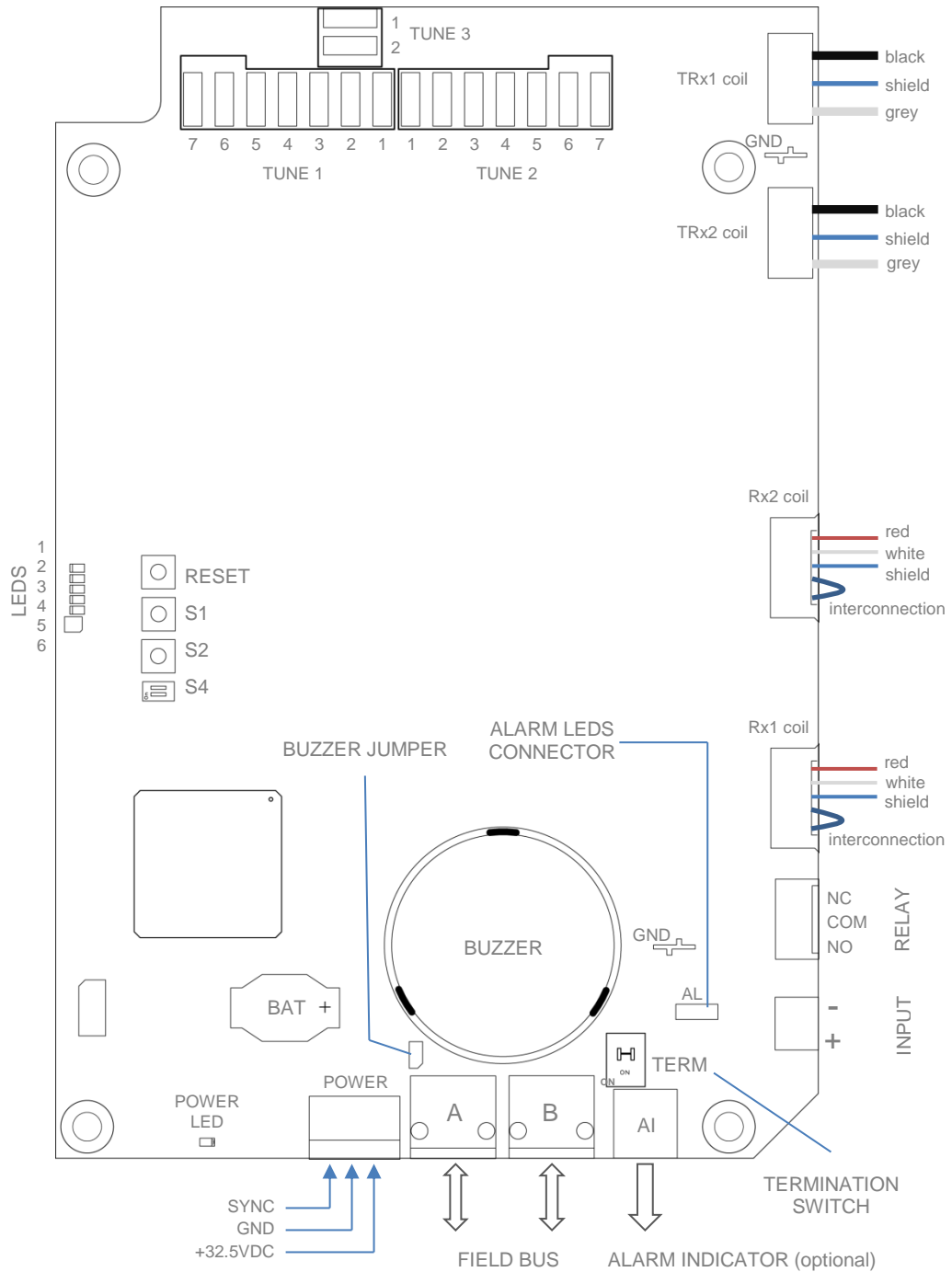


Figure 32: The Control Unit Printed Circuit Board

11.2 Control Unit PCB Components

Table 4 shows the Control Unit PCB components and a description of their function.

Component	Function
AI	Connector for the optional external alarm indicator
AL	Connector for the integrated alarm LEDs indicator
ANT 1	Floor antenna coil TRx1
ANT 2	Floor antenna coil TRx2
BAT	Backup battery for internal clock
BUS A	Field Bus A connector for RJ45 connection. Allows the board to be connected in the Field Bus structure.
BUS B	Field Bus B connector for RJ45 connection. Allows the board to be connected in the Field Bus structure.
BUZZER	On-board buzzer for alarm notifications
BUZZER JUMPER	Jumper to enable / disable the buzzer. Default this jumper must be placed.
Input 1	Input to manually trigger an alarm using an external push button
LED 1	Error indicator
LED 2	Indicator for development purposes
LED 3	Activity indicator
LED 4	Detection active indicator Blinking = startup, on = detection active
LED 5	Application active indicator Slowly blinking = application active

LED 6	Status indicator; Green = connected to Field Bus Red = bootloader mode Blinking = firmware upload active
-------	---

POWER	External power supply input connector
-------	---------------------------------------

RELAY	The external connection for relay REL1. Normally Open (NO), Common (COM) and Normally Closed (NC) potential free contacts are available to connect external devices like camera's, buzzers, etc. Relay max. rating: 30VDC/1A
-------	---

RESET	Reset button. Pressing this button will result in a soft reset of this board without interrupting the Field Bus.
-------	--

S1	For development purposes
----	--------------------------

S2	For development purposes
----	--------------------------

S4	For normal operation of the board, these switches must be in the OFF position. Switch 1 ON: for development purposes OFF: normal operation Switch 2 ON: for development purposes OFF: normal operation
----	--

TERM	Field Bus termination switch. The Field Bus needs to be terminated properly to avoid signal reflections which can cause bad communication. The first and last device in the Field Bus structure need to terminate the bus. Switch to ON if this TRx is the last device in the Field Bus. If no CrossCONNECT Access Point is installed, the first device in the Field Bus must also be terminated.
------	---

TUNE 1	Pluggable bridge positions to tune the transceiver coil connected to connector TRX1
--------	---

TUNE 2	Pluggable bridge positions to tune the transceiver coil connected to connector TRX2
--------	---

TUNE 3	Pluggable bridge positions to reduce the mutual influence of the transceiver coils connected to connectors TRX1 and TRX2.
--------	---

Table 4: The Control Unit PCB components

11.3 Input connection

The ARGUS AM Control Unit board is equipped with one input, which can be used for connecting a pushbutton (Forced Alarm option). Such a button can be used to manually trigger the alarm in case of a suspicious situation.

To avoid interference, caused by the wires which will be connected to the input, it is very important to only connect the wires to the input connector contacts.

Do not connect any of the wires directly to a GND contact on the Control Unit board or on the power supply! Use the Input's "-" (minus) connector to connect to the ground.

Figure 33 shows the proper way to connect a "Forced Alarm" pushbutton between the input and the "+" and "-" connector.

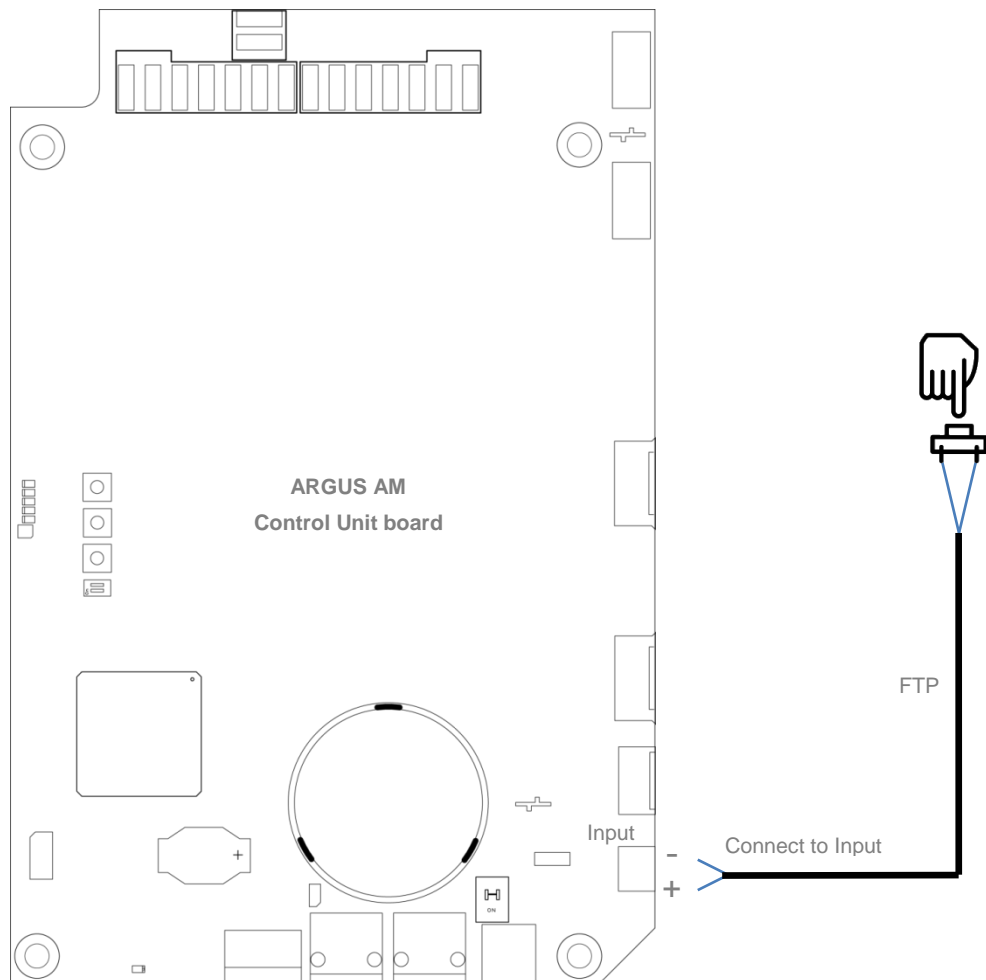


Figure 33: Proper input connection

12 Configuration

This chapter describes the recommended adjustment procedure for the ARGUS AM Floor System.

12.1 General considerations

- Refer to chapter 3.1 (page 6) for noise sources and installation guidelines.
- Install the antenna(s) and Control Unit at the required location.
- Connect the antennas to the corresponding connectors on the Control Unit.
- Connect the power supply to the power input of the Control Unit
- Switch on the power supply → the power LED on the Control Unit board will light up
- Wait for about 10 seconds for the system to start up.

12.2 Configuration settings

Although the ARGUS AM Floor System comes pre-configured with factory settings, it is necessary to fine-tune this board for best performance in the specific environment it is installed in.

The ARGUS AM Floor System must be configured through the Field Bus using a laptop and Cross Point Device Explorer software.

13 Cross Point Device Explorer

This chapter covers the ARGUS AM Floor System settings in combination with the Cross Point Device Explorer software.

Please refer to chapter 8.2 for details on the Field Bus structure.

For the Cross Point Device Explorer installation procedure and other general settings we refer to the **Cross Point Device Explorer User Manual** (download available at www.crosspoint.nl).



Make sure to keep your laptop at least 3m away from the antennas. The backlight of the laptop screen can create a lot of noise and might reduce the performance of the system!

13.1 Starting the Device Explorer

After having installed the Cross Point Device Explorer, go to

Start > All programs > Cross Point > Device Explorer

(or your, during installation specified, destination folder) to start the Device Explorer.

13.2 Logon to Device Explorer

After starting Device Explorer, you will be prompted to enter your username and password that allow you to use the Device Explorer.

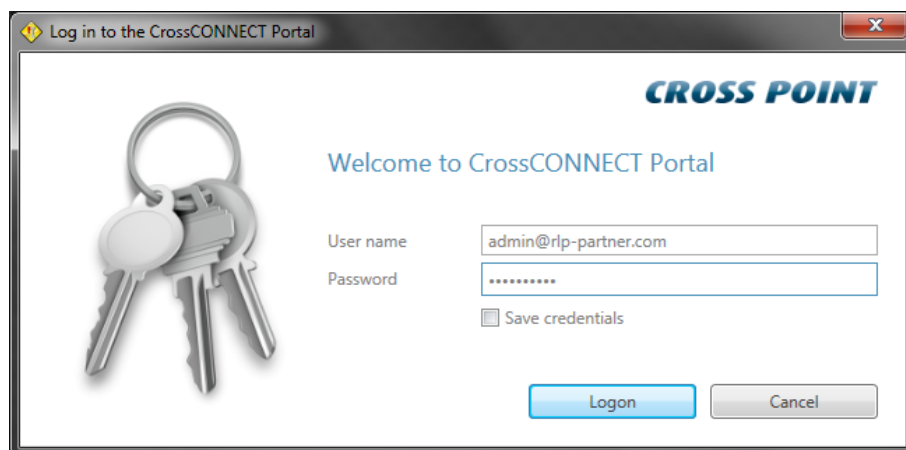


Figure 34: Logon to Device Explorer

These credentials have been supplied to you by Cross Point or a partner of Cross Point.

Tick the “Save credentials” checkbox if you want to use the specified logon credentials each time you start the Device Explorer.

Enter your credentials and click the Logon button to continue.

13.3 Store overview

When Device Explorer is started and you have successfully logged-on, the Store overview screen opens.

All Access Points that are available for you are shown in this screen.

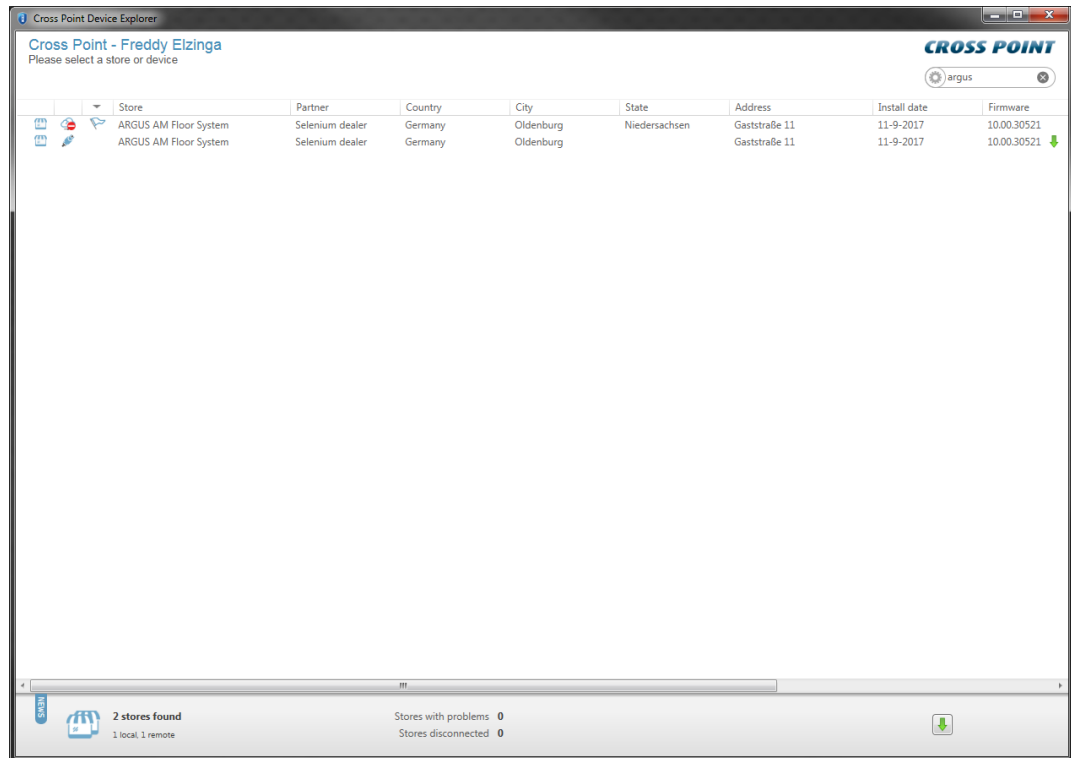


Figure 35: Store overview

Select the required store from the Store overview screen through a double click on the store to be able to perform local or remote service to the ARGUS AM Floor System that is installed in the selected store.

The next chapters will cover the specific properties and settings.

Please refer to the Cross Point Device Explorer User Manual for more information on how to change settings for the Access Point itself.

13.4 Dashboard

After a successful logon to the selected Access Point, the Dashboard for this Access Point appears.

When the ARGUS AM Floor System is connected, it will appear in the Unarranged entrance. The Dashboard will display details similar to those in Figure 36.

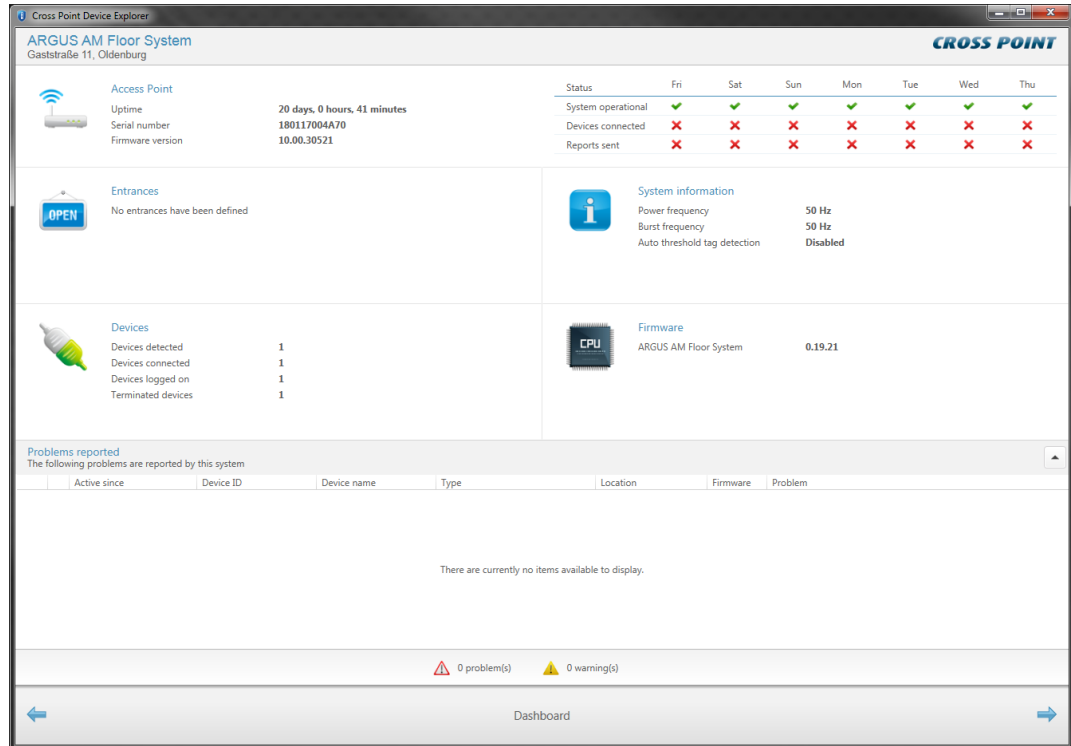


Figure 36: Dashboard

13.5 Configuring entrances

Click the blue arrow in the bottom right corner of the Dashboard to navigate to the System screen. This screen contains the Unarranged entrance. Click the entrance to open its contents.

A visual representation of the ARGUS AM Floor System is shown in the 3D view.

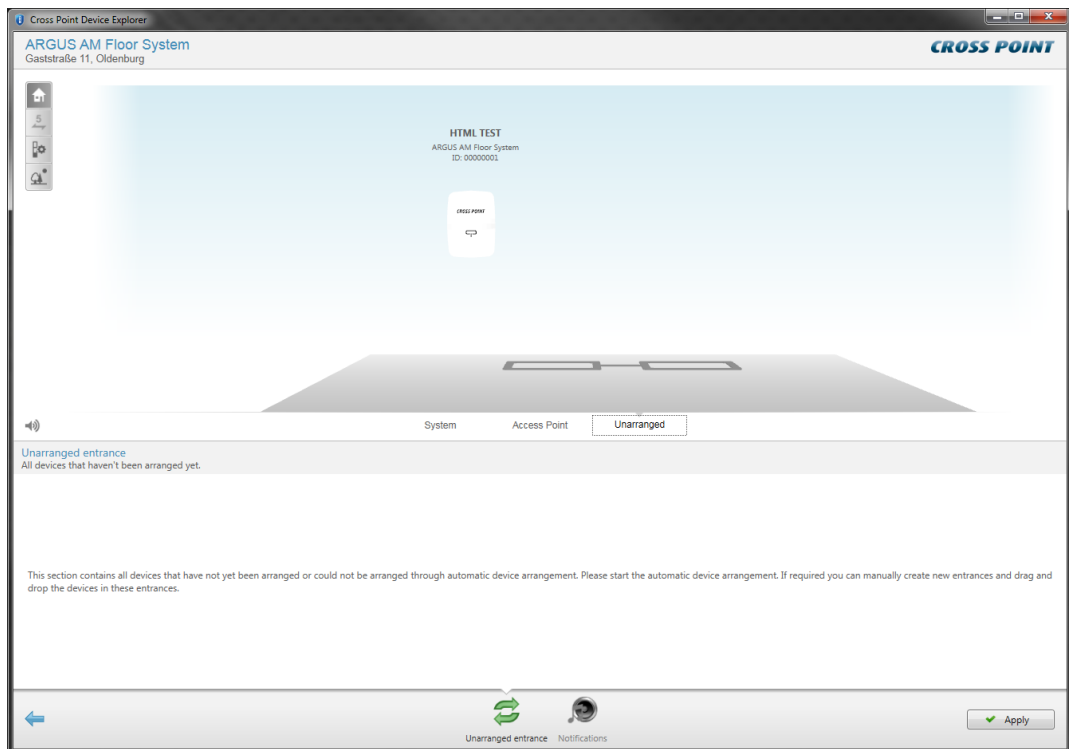


Figure 37: Unarranged entrance with ARGUS AM Floor System

The entrance page is divided in 2 parts:

13.5.1 Entrance - Top part

The top part of the entrance page consists of the following section:

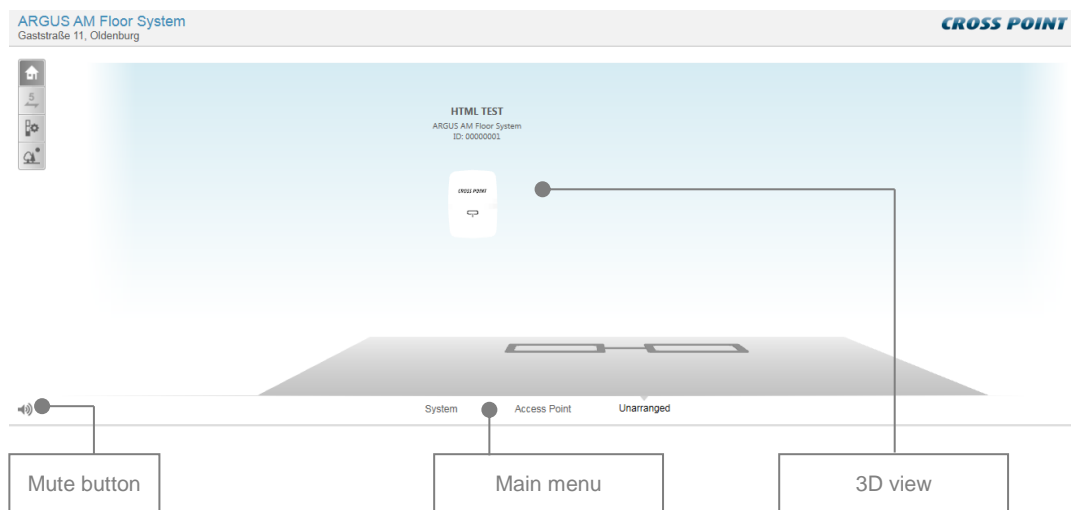



Figure 38: Entrance – Top part

The **Mute** button  enables you to switch off all buzzers on all devices at once. This is useful when you are configuring the system and don't want any loud alarms.

13.5.2 Main menu

The Main menu lets you quickly navigate to the other available sections of the Device Explorer:

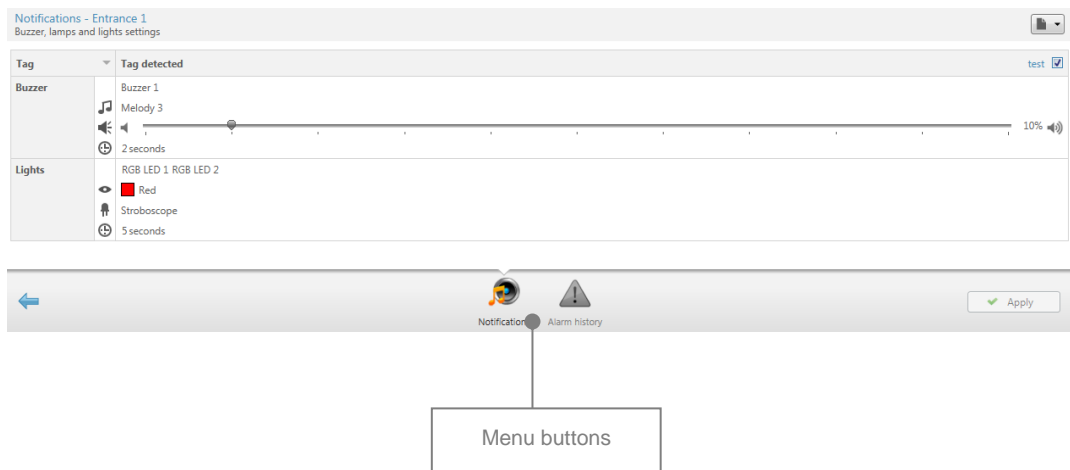
- **System** – refer to paragraph 13.5.7.6 for further details
- **Access Point** – refer to the Cross Point Device Explorer manual for further details

13.5.3 3D view

The 3D view shows a visual representation of the ARGUS AM Floor System, combined with a panel with various real-time indicators.

13.5.4 Entrance - Bottom part

The bottom part of the entrance screen will show various information and settings, dependent of the selected menu button.



13.5.5 Creating an entrance

Once the ARGUS AM Floor System has been detected by the Access Point, it needs to be placed in its own entrance. Follow the next steps to create a new entrance:



1. Click the "Show entrance arrange view" button
2. Click the "Create new entrance" button => a new entrance (Entrance 1) is created and visible
3. Hover your mouse cursor over the control unit in the 3D image and click on your right mouse button to open the settings window

4. In this window, select the option “Move to Entrance 1” => the ARGUS AM Floor System has been moved to Entrance 1 and the Unarranged entrance has been removed, see Figure 39.
5. Click the Apply button to save these settings.

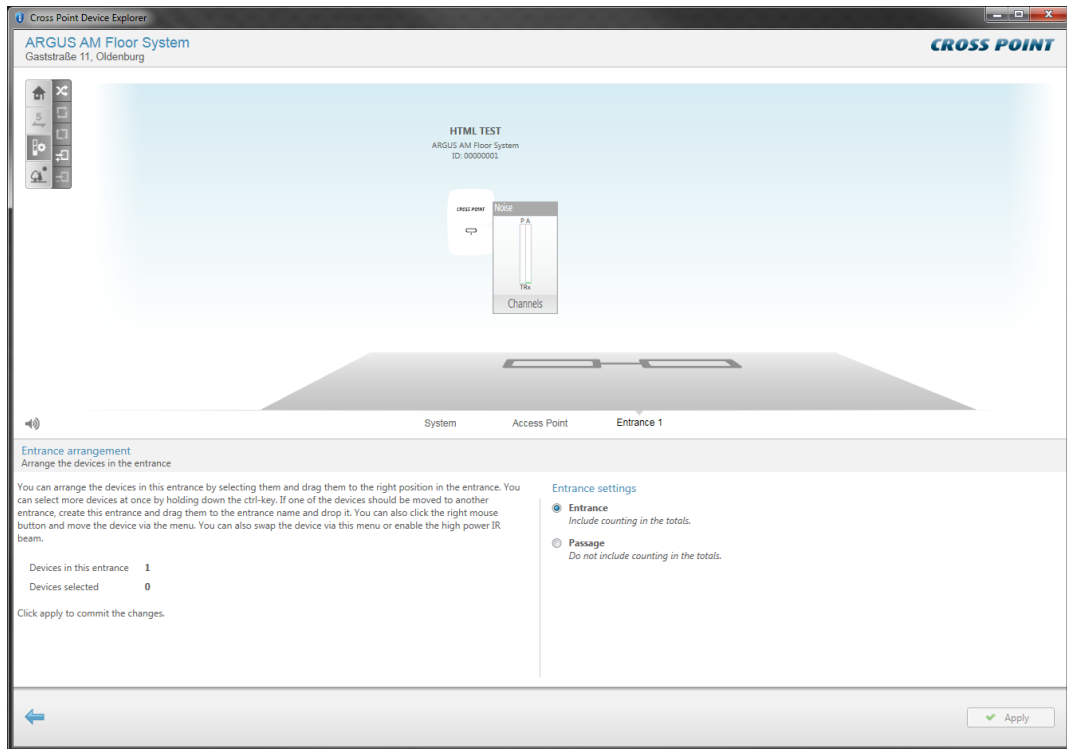
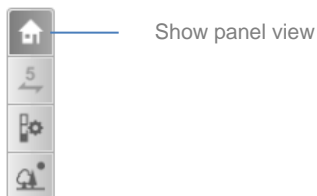


Figure 39: ARGUS AM Floor System placed in Entrance 1

Click the “Show panel view” button to return to the panel view.

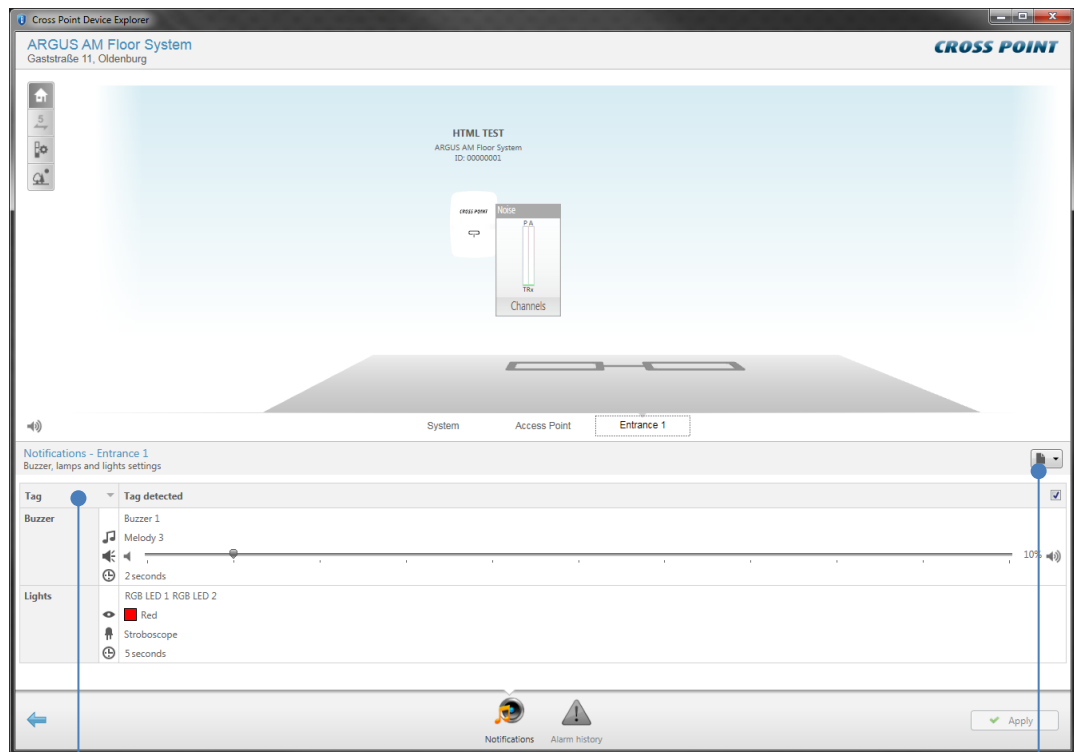


13.5.6 Notifications

In case of an alarm situation, notifications will be used to draw the attention of store personnel. Notifications can be set for each entrance individually, when different notifications per entrance are required, or you can set the notifications for all entrances at once. To do this, go to **System** and specify the required notification settings. See section 13.5.7.6 for more details.

13.5.6.1 Set notifications for an entrance

In the panel view of the entrance, the notifications can be configured.



Select notification type here

Pre-defined notifications

Figure 40: Entrance notification settings



Entrance notification settings apply to all devices that are part of the selected entrance. It is not possible to create different individual notification settings within the same entrance!

The following notification types can be selected by clicking on the cell in the top left corner of the notifications table:

- Tag
- Other

13.5.6.1.1 Tag alarms

Notification	Explanation
Tag detected	Plays the selected alarm settings on the selected buzzer and lights. Buzzer 1 is the integrated buzzer. Buzzer 2 is on the optional external alarm indicator. RGB LED 1 is the integrated LED bar of the ARGUS AM Floor System control unit itself, RGB LED 2 is on the optional external alarm indicator.

Table 5: Alarm notifications

13.5.6.1.2 **Other notifications**

Notification	Explanation
Default notification	Enable this notification if you want to visualize that the system is switched on. For example blue lights can be switched on infinite to show the visitor that the system is active.
Detection disabled	Not implemented.
System jammed	Set this notification to notify store employees in case the system is being jammed with a jamming device or as a result of another high noise source.
Tag in field	Enable this notification to notify store personnel that one or more tagged items are positioned within detection range, resulting in disturbance of the detection sensitivity and creating unexpected and unwanted alarms.

Table 6: Other notifications

13.5.6.1.3 **Saving notification settings**

Notification settings can be saved for usage in other entrances or stores. Click the **Load and save notifications** button and select the option 'Save notifications' from the menu and the Save notifications dialog opens.

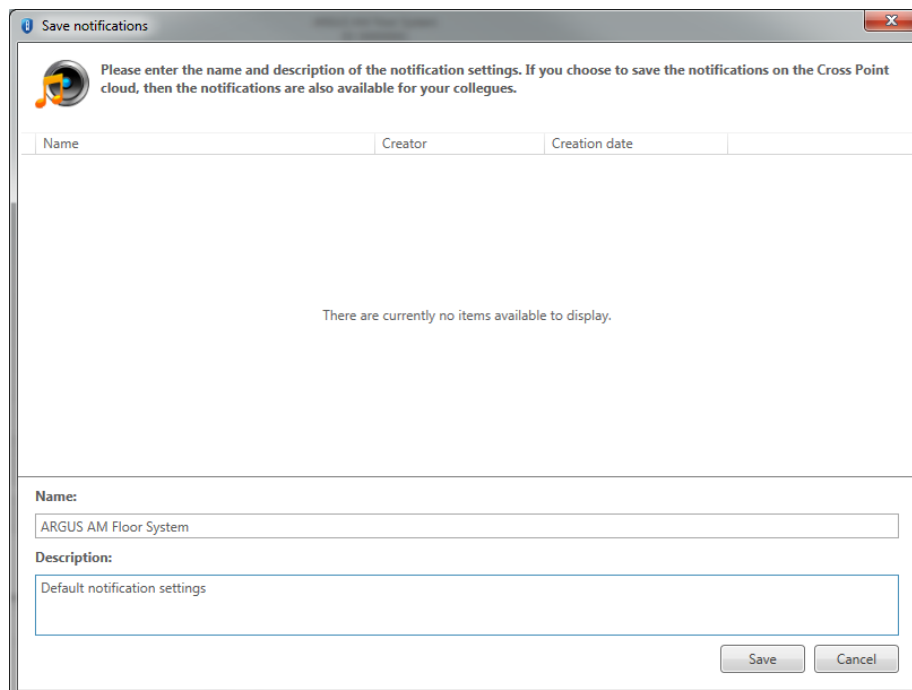


Figure 41: Save notifications

A list with pre-defined notifications that have previously been saved appears. Select one from the list to overwrite the selected pre-defined notification, or enter a new name and description for the new notification.

If you have an active internet connection, you can also tick the checkbox in front of the option 'Save on server' to store this new pre-defined notification centrally, so it is also available for your colleagues.

Click the Save button to store the notification.

Select a notification and click the **Delete** button  to delete a pre-defined notification.

13.5.6.1.4 Loading pre-defined notifications

Pre-defined notification settings can be loaded again by clicking the **Load and save notifications** button, selecting the option 'Load notifications' from the menu and the Load notifications dialog opens.

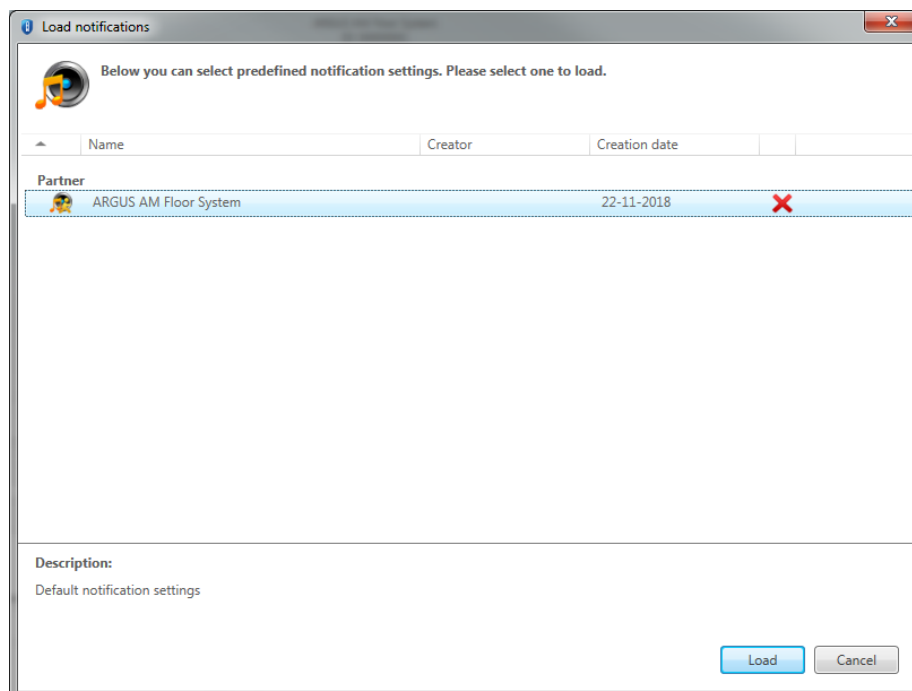


Figure 42: Load notifications

A list with pre-defined notifications that have previously been saved appears. Select the required notification and click the **Load** button to load the pre-defined notification settings.

Select a notification and click the **Delete** button  to delete a pre-defined notification..

13.5.6.2 Alarm history

The Alarm history screen shows a list of the tags that have been detected on the ARGUS AM Floor System in this entrance.

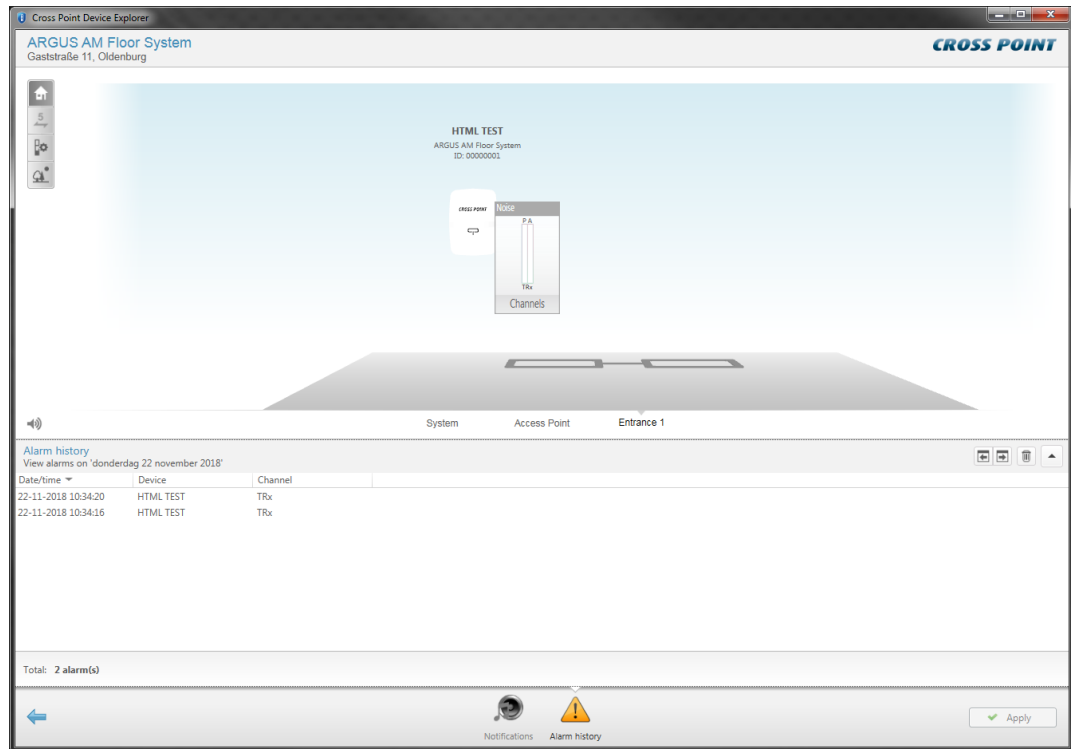





Figure 43: Alarm history

Click the Delete button  to delete all alarms in the list and to permanently remove them from all the connected antennas in this entrance.

All alarms are date & time stamped, so it's easy to find out when they occurred.

It is possible to view the alarm history per day for the last 30 days. Just click the Previous/Next day buttons   to scroll through the alarm history.

13.5.7 Entrances – selected device

If you click on the ARGUS AM Floor System unit or panel in the 3D-view, some individual settings can be configured. In the bottom part of the screen, various buttons will be available.

13.5.7.1 Scope view

The Scope view screen shows the signals that are received by the ARGUS AM Floor System.



Figure 44: Scope view

The Scope view itself shows the signals that are being detected on the antennas that are connected to the ARGUS AM Floor System control unit.

The red line is the threshold level. The threshold level actually determines the sensitivity of the system. A low threshold level creates higher sensitivity, where a high threshold level results in lower sensitivity.

When a signal (blue line) rises above the threshold level (red line) and other detection criteria are met, the alarm will be triggered.



Never adjust the system too sensitive, as this will result in false alarms! Remove any noise sources that interfere with the system or install the antennas as far as possible away from noise sources.

Signals received by the ARGUS AM Floor System are processed based on the phase and anti-phase principle. This way it is better possible to distinguish between valid tag/labels signals and random noise signals. The settings related to this can be individually set for the phase and anti-phase mode, making it possible to obtain maximum sensitivity in anti-phase mode when, for example, more noise is present in phase mode or vice versa.

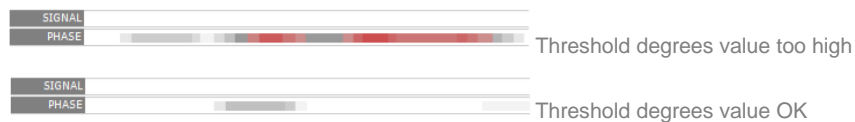
The threshold level can be adjusted in two ways; automatically or manually

13.5.7.1.1 Automatic threshold level adjustment

Tick the Automatic threshold checkbox to activate automatic threshold level adjustment. Depending on the environmental noise levels, the system will automatically and continuously adjust its threshold level higher than the noise levels.

In automatic threshold mode, the following settings are available:

- **Minimum threshold Δ** – the automatic threshold level will never go below the specified minimum threshold value. Use this setting to make sure the system will not get too sensitive, creating potential false alarms, when noise levels are very low. Default value is 10.
- **Threshold degrees Δ** – This setting is used to set the accepted angle of the detected signal. A detected tag/label signal has a more or less stable angle, where the angle of noise signals vary, which makes it possible to distinguish between a valid tag/label signal and noise signals. When the PHASE bar, located underneath the scope view image, shows a lot of valid (red) signal without the presence of a tag in the vicinity of the antennas, it is advised to reduce the threshold degrees value. The best setting is when there is only an occasional grey signal visible in the PHASE bar.



Default value is 10. It is not advised to use a lower value, because valid tag/label signals can then be discarded and will not trigger the alarm.

- **Sigma σ** – This setting represents the distance that is automatically kept between the noise level and the threshold level. A lower value will increase the sensitivity by keeping less distance between the noise and threshold level, making the system also more vulnerable for false alarms. A higher value decreases the sensitivity, while making the system less vulnerable for false alarms. The default value is 30 and should be sufficient for most situations.

13.5.7.1.2 Manual threshold level adjustment

Un-tick the Automatic threshold checkbox to activate manual threshold level adjustment. In the manual threshold mode, the software will not automatically adjust the threshold level anymore, so a sudden increase of noise might result in false alarms.

In manual threshold mode, the following settings are available:

- **Threshold degrees Δ** - See explanation under Automatic threshold mode.
- **Threshold Δ** - This setting is the actual manual threshold setting that can be changed by typing a value in the input field, clicking the up/down arrows in the input field or by dragging and dropping the manual threshold slider next to the scope view image. Remember that a high value makes the system less sensitive for detection of tags/labels. A low value makes the system more sensitive for detection of tags/labels, but also increases the chances on false alarms. Therefore for the automatic threshold setting is for most situations the advised setting.

13.5.7.1.3 Noise level indicator

The noise level indicator, located on the right of each scope view image, shows a value between zero and one hundred, which represents the amount of noise that is being detected. A high noise level will result in reduced detection, which means that specified detection distances might not be achieved. To improve this situation, the noise source(s) must be located and removed when possible.

13.5.7.1.4 Extended configuration views

When besides the transceiver antenna also receiver antennas are installed, the scope views of these receivers can also be viewed and the phase and anti-phase settings can be adjusted individually for each connected antenna.

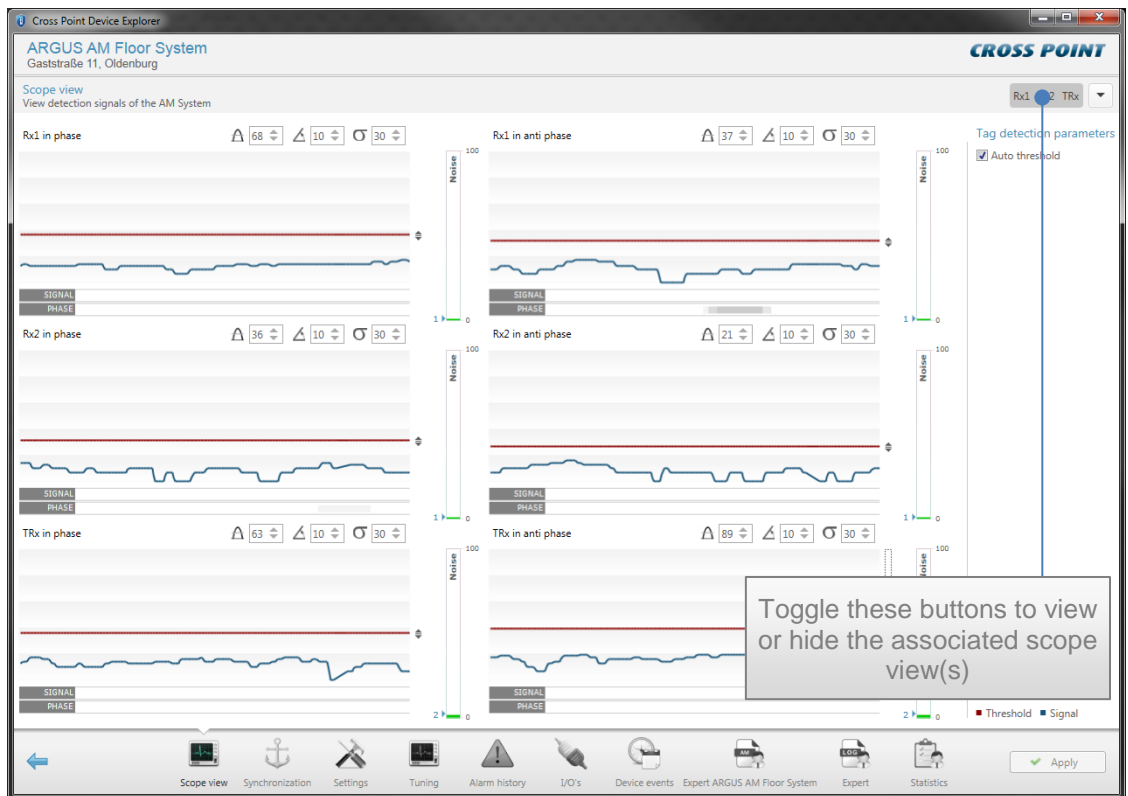


Figure 45: Scope view of transceiver and receiver antenna signals

NOTE: The Auto threshold setting is a global setting, which means that it is set for all channels.

13.5.7.1.5 Triggering an alarm

When the signal of tag or label is detected by any of the connected antennas, the control unit will trigger the tag detected alarm notification. An alarm is only triggered when both the SIGNAL and PHASE requirements are met. This means that the signal must be higher than the threshold level and a constant threshold degrees angle has been detected. If one of these requirements is not met, then the alarm will not be triggered.

Situation 1



SIGNAL too low and continuous PHASE detected; result: no alarm

Situation 2

SIGNAL	
PHASE	

SIGNAL detected but no continuous PHASE detected; result: no alarm

Situation 3

SIGNAL	
PHASE	

SIGNAL detected and continuous PHASE detected; result: alarm

13.5.7.2 Synchronization AM

When multiple AM systems are installed in relative close vicinity of each other, it is of extreme high importance that the transmission bursts of all transceivers occur at the same moment. To be able to view and change the position of these transmission bursts, the Synchronization screen is available.



When the Synchronization screen is open, the transmission burst of this system is disabled. As a result of this, the system will not detect any tags! Make sure to leave this screen to enable detection of tags again.

When the transmission bursts of any surrounding AM systems are not synchronized properly, false alarms and reduced sensitivity will be the result. The Synchronization screen will show exactly if and where other system transmission bursts are detected.

Figure 46 shows an example of faulty synchronization. Our system's transmission burst (Burst window 1, indicated as a vertical orange bar) is at a different moment in time than the other system's transmission burst, which is on its turn causing interference in our system's detection window.

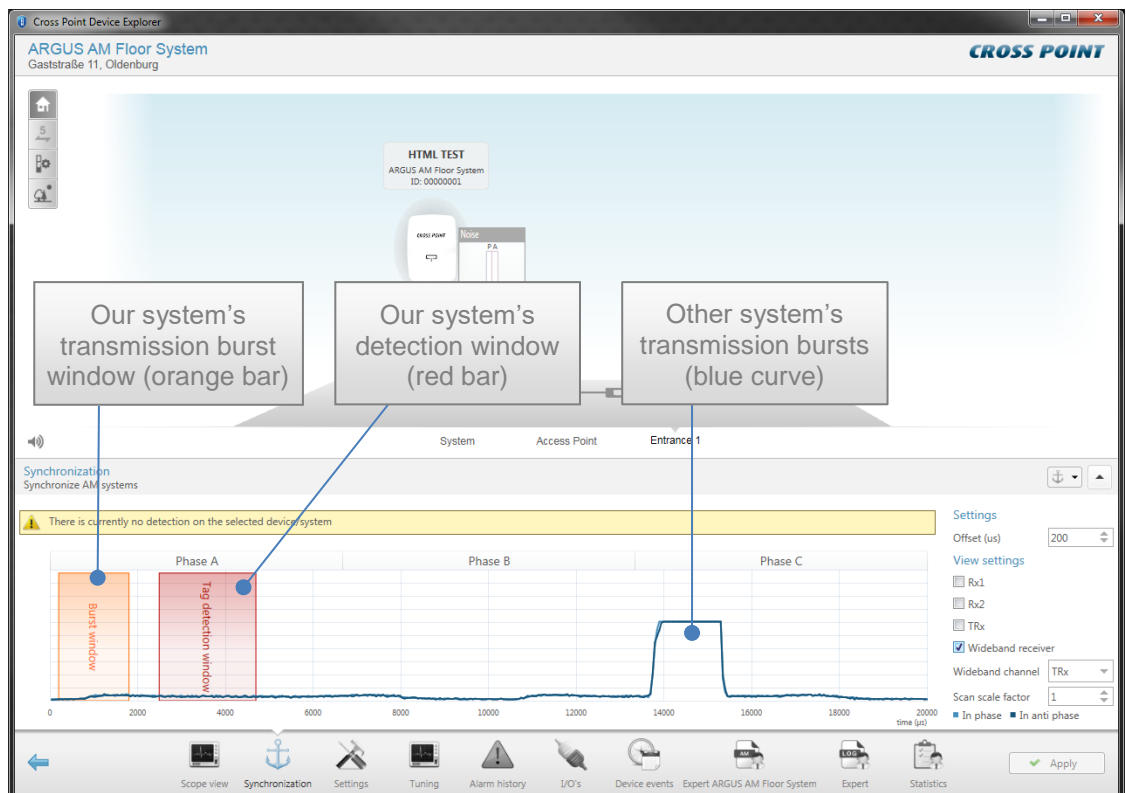


Figure 46: AM synchronization – wrong adjustment

The transmission burst must be synchronized manually by dragging and moving the burst throughout the complete 20ms (@50 Hz) time base.

Just hover the mouse cursor over our transmission burst (the cursor will change to a horizontal double arrow) and press down your left mouse button. While keeping the mouse button pressed, move the transmission burst and position it on top of the other system's transmission burst. Together with moving the transmission burst, also the receiver window will move automatically since it has a fixed distance to the transmission burst.

Figure 47 shows the correct way to synchronize our system with another AM system in its vicinity.

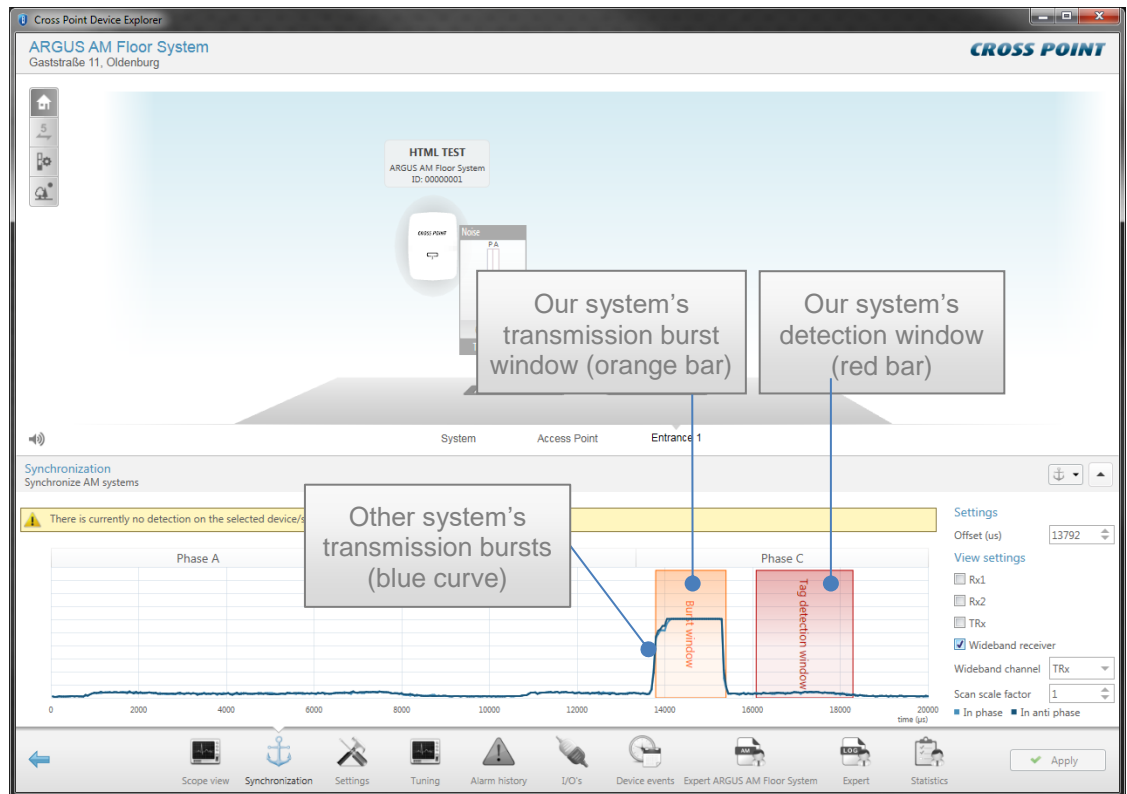


Figure 47: AM synchronization – correct adjustment

13.5.7.2.1 View settings

Here you can select on which channel(s) you want to view the synchronization signals.

Rx1

The Rx1 channel shows the filtered signals received by the optional receiver antenna, which is connected to the input RX1 of the Control Unit board.

Rx2

The Rx2 channel shows the filtered signals received by the optional receiver antenna, which is connected to the input RX2 of the Control Unit board.

TRx

The TRx channel shows the filtered signals received by the transceiver antenna.

Wideband receiver & wideband channel

When selected, the Wideband receiver channel shows the raw and unfiltered signals and gives a clear view on the received signals on the antenna that is selected from the Wideband channel list. By default it shows the signals received by the TRx antenna. When

also receiver antennas are connected, the signals received by these receivers can be viewed by selecting the receiver from this list.

Scan scale factor


The Scan scale factor lets you zoom-in on the received signals. When this value is increased, the signals that are shown in the view will increase in size. A higher scale factor is very helpful to find the position of the transmission bursts of other AM systems in the area, especially when their signals are too weak to see in the low scale factor view. When other weak AM transmission bursts are made visible with a higher scan scale factor, then this will enable you to properly synchronize our TRx transmission burst with these neighboring systems.





The Scan scale factor is only related to the zoom level of the signal views and has no relation to the detection sensitivity of the system.

13.5.7.2.2 Temporarily disabling other device bursts

When you start synchronizing entrance(s), start by selecting the Synchronization page of the first device. It is very useful to switch the transmission bursts of all other entrances off, so you can determine if there are any other AM systems in the area, to which you must synchronize your system.

To switch the transmission bursts of the other devices off, select the Automatic synchronization button  to unfold a list of all other available devices.

Click on the green checkmark  in front of the device name to disable the transmission burst of that device. The disabled icon  will appear, indicating the transmission burst for that device is switched off. Click this icon again to switch the burst on again.

When you leave the Synchronization page, all disabled devices will automatically start bursting again.

13.5.7.3 Settings

The Settings view screen shows various available settings for the ARGUS AM Floor System.

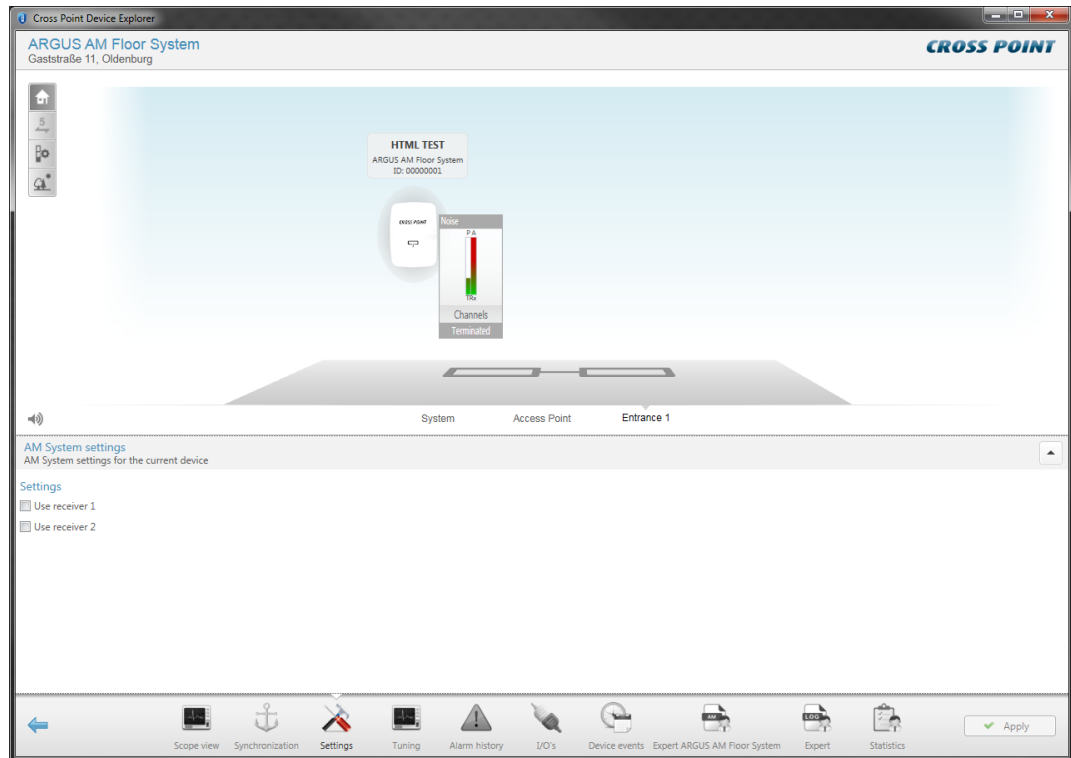


Figure 48: Settings

This page lets you select whether extra receiver antennas are used or not. In case you are installing an extended configuration, like transceiver antenna + 2 receiver antennas, then both checkboxes must be ticked to activate the receiver channels. If only one receiver antenna is used, make sure to tick the checkbox that corresponds with the receiver channel to which the actual receiver antenna is connected to the control unit. Activate these settings by clicking the Apply button.

13.5.7.4 Tuning AM

The ARGUS AM Floor System is performing at its best when maximum power is being transmitted at 58kHz. The Tuning screen shows a graphical display of the transceiver antenna tuning.



Figure 49: Tuning AM



Be aware of the high antenna voltages! Do not touch the backside of the PCB or the metal tuning jumper pins when the board is powered, as this might result in you receiving an electrical shock!



When the Tuning screen is open, detection of tags is disabled. Make sure to switch to another screen if you want to test the detection performance!

By changing the positions of the antenna jumpers on the Control Unit board, you can find the positions for both coils where they have the highest voltage output at 58kHz (the vertical red line). The spot where the curves cross the red line is the actual transmitted power. A higher output will increase the performance of the ARGUS AM Floor System, where a lower output will result in less performance.

To better view the tuning signals, click the “Maximize bottom panel view” button to view the tuning signals full screen like in Figure 50.



Figure 50: Maximized tuning screen

The tuning of the transceiver antenna is influenced by the following factors:

1. The vertical distance between the transceiver antenna and metal in the floor underneath
2. The vertical distance between the transceiver antenna and the shielding tiles that are placed underneath
3. The horizontal distance between the two transceiver coils (default 30 cm)
4. Incorrectly connected transceiver coils. The wires of the coils should be connected in exactly the same way.

When one or more of the above factors are changed after the antenna was already tuned properly, re-tuning might be necessary. Make combinations of the jumpers on TUNE 1, TUNE 2 and TUNE 3 to achieve the highest voltage for both transceiver coils.

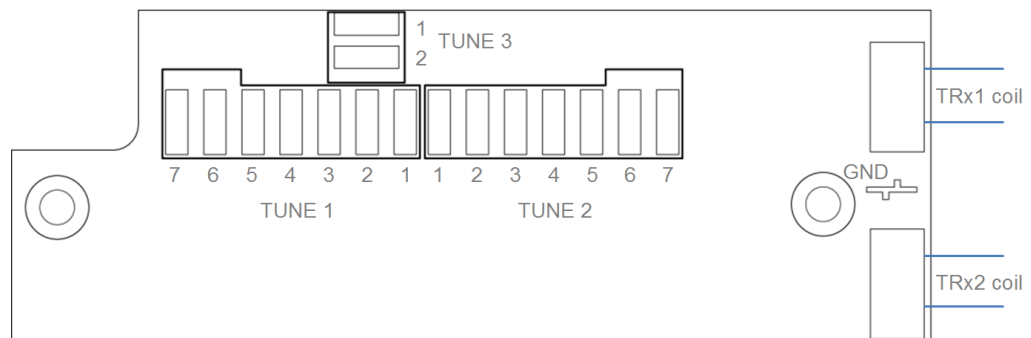
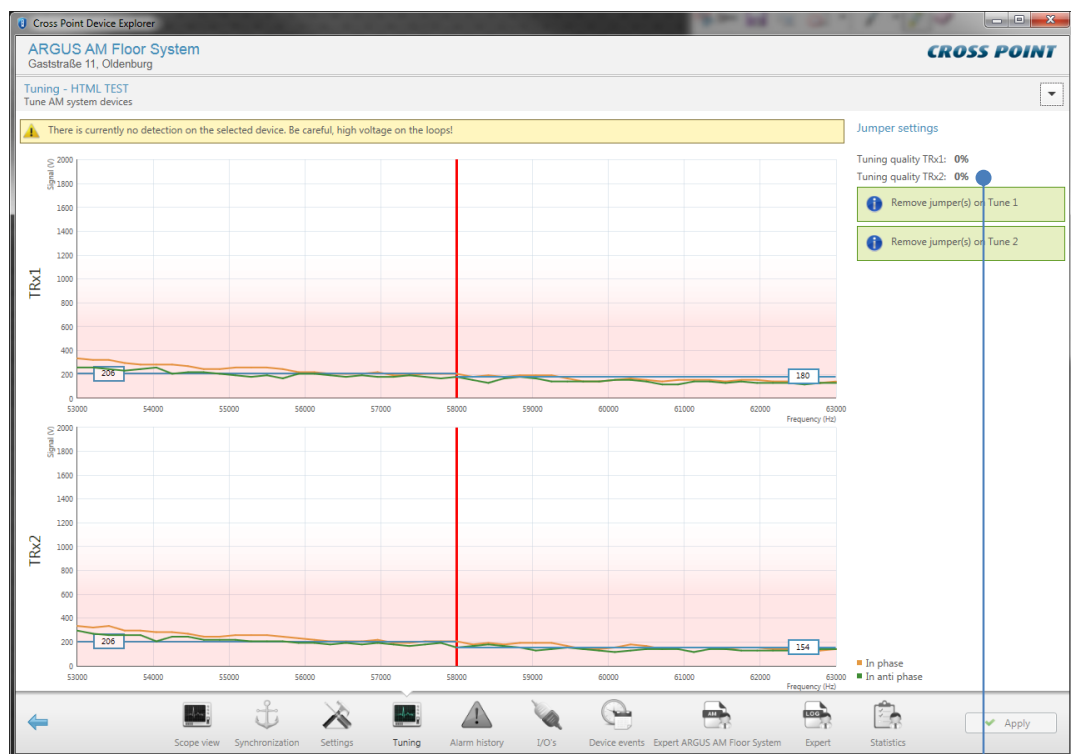


Figure 51: Position of the tuning jumpers on the electronic board

13.5.7.4.1 How to tune the transceiver antenna

This section explains the proper way to tune the ARGUS AM Floor System transceiver antenna.

1. Make sure the transceiver antenna is placed in the required position, following the instructions as described in chapter 7.
2. By factory default, all tuning jumpers are placed on the electronic board.
3. The Jumper settings section of the Tuning screen shows the tuning quality of TRx1 and TRx2 coils as well as instructions on which jumpers to remove and/or to add, see Figure 52.



Tuning quality indication and jumper information

Figure 52: Tuning screen with tuning quality indication and jumper information

4. Remove the jumpers from Tune 3 and start tuning the “in phase” (orange line).
5. Follow the instructions given by removing jumpers from Tune 1 and Tune 2. The higher numbers represent a higher capacitance (large steps), the lower numbers represent a lower capacitance (small steps).
6. After removing the first jumpers, the tuning signals should become visible, like in Figure 53, but the tuning is (most likely) not optimal yet.
7. Keep following the instructions on the screen until you have reached the optimal tuning as close as possible to 100%, like in Figure 54, where the tuning quality of TRx1 is 98% and TRx2 is 95% and no more instructions on removing or adding jumpers are given.



Figure 53: Visible tuning signals – tuning is not optimal yet

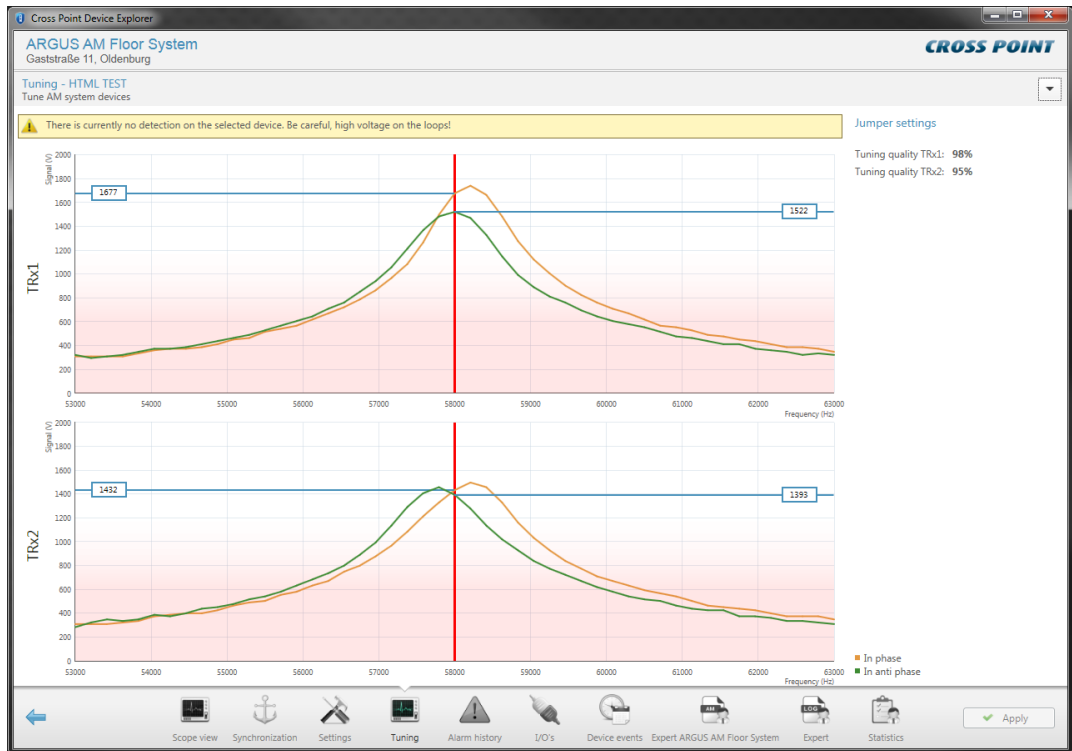


Figure 54: Optimal tuning for this transceiver antenna has been reached

13.5.7.5 Alarm history

The Alarm history screen shows a list of the tags that have been detected on the selected ARGUS AM Floor System control unit. The information is retrieved from the electronic board when you enter this screen, so it may take some time before all information is visible.

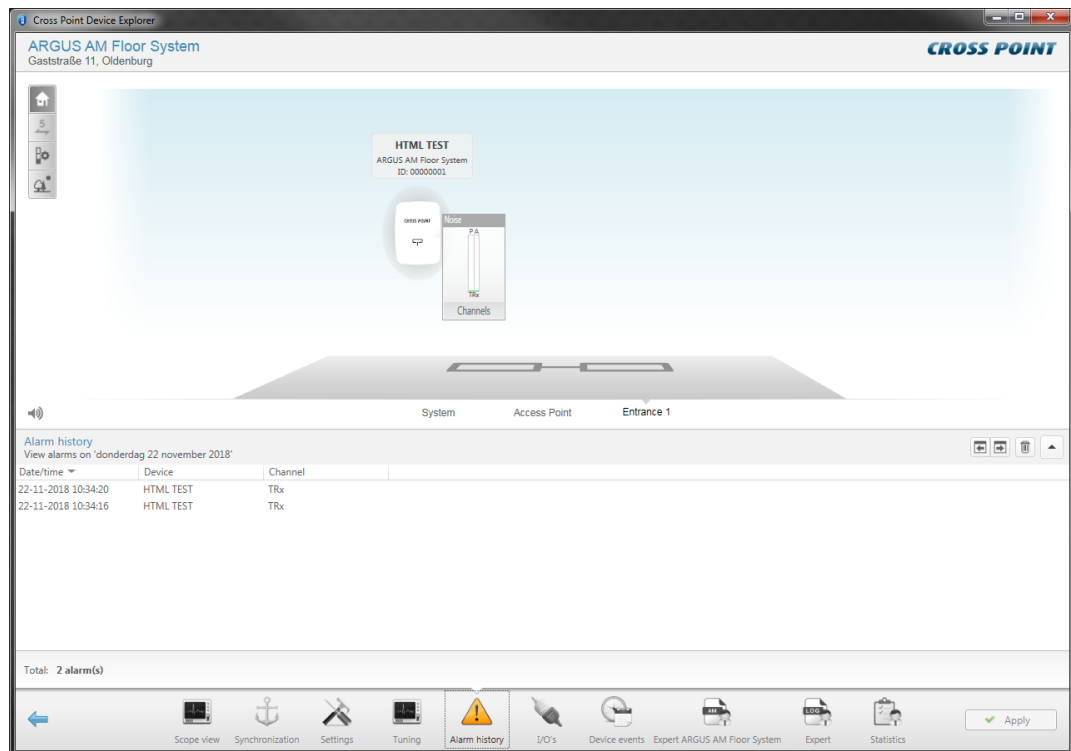





Figure 55: System – Alarm history

Click the Delete button  to delete all alarms in the list and to permanently remove them from all the connected antennas in this entrance.

All alarms are date & time stamped, so it's easy to find out when they occurred.

It is possible to view the alarm history per day for the last 30 days. Just click the Previous/Next day buttons   to scroll through the alarm history.

13.5.7.6 Notifications – I/O settings

Next to the audio and visual alarm notifications, as described in section 13.5.4, also a relay can be programmed to activate any external device (camera, external buzzer, etc.) during an alarm situation. The available input can be used to connect an external pushbutton to enable the Forced Alarm option.

These notification settings have to be programmed on each individual Control Unit, since the relay and input are device specific. Any externally connected device needs to be physically connected to the Control Unit.

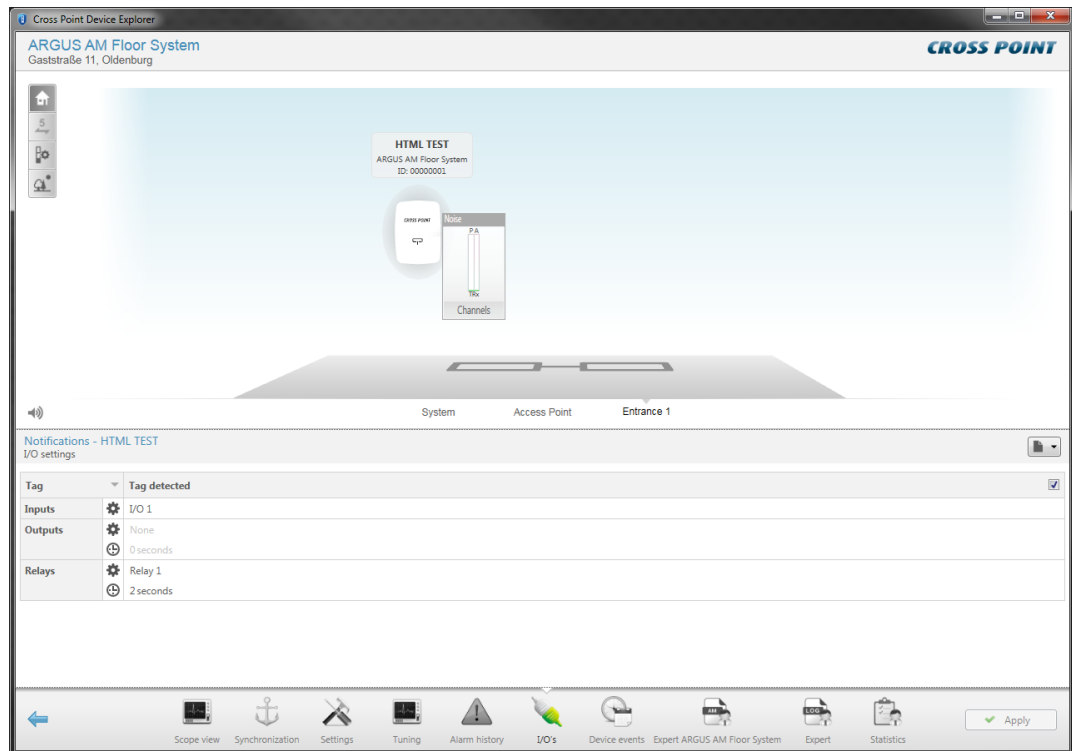


Figure 56: Input and relay settings



Input and relay notification settings apply only to an individual Control Unit!

The following notification types can be selected by clicking on the cell in the top left corner of the notifications table:

- Tag
- Other

Refer to section 13.5.4 to view all available notification types.

13.6 System

Clicking the System hyperlink in the Main menu or clicking the System information section in the dashboard will open the System information screen.

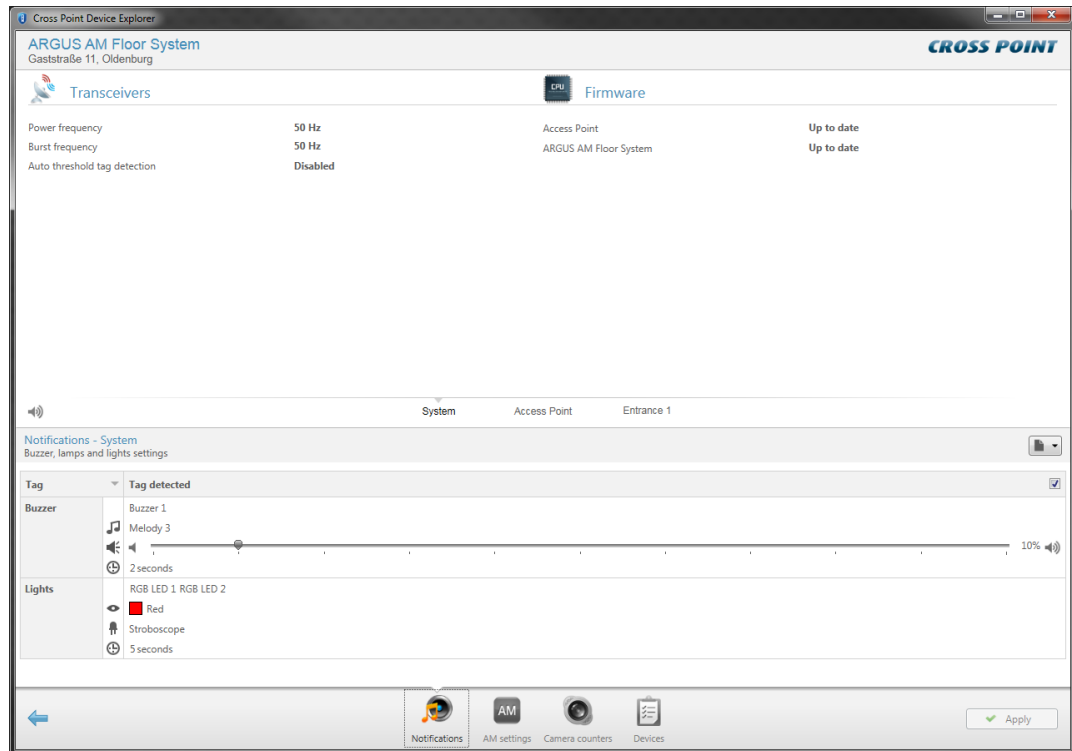


Figure 57: System information & notifications

The top-part of this screen shows information about the connected transceiver(s) and whether the firmware of all connected devices is up-to-date. The bottom part shows 3 tabs:

13.6.1 Notifications

In case of an alarm situation, notifications will be used to draw attention and to present information about the type of alarm.

Notifications can be set for all entrances at once by configuring the notifications in this System screen. In case different notifications per entrance are required, select the entrance and specify the required notification settings at entrance level. See section 13.5.6.2 for more details.



Notification settings, which are configured in this System screen, will be applied system-wide, which means to all devices connected to this Access Point. Any notification settings that have been configured for a specific entrance will be overwritten with the values that are specified in this System screen!

Refer to section 13.5.4 for more details on the available notification settings.

13.6.2 AM settings

The AM settings screen allows specific AM settings to be changed.

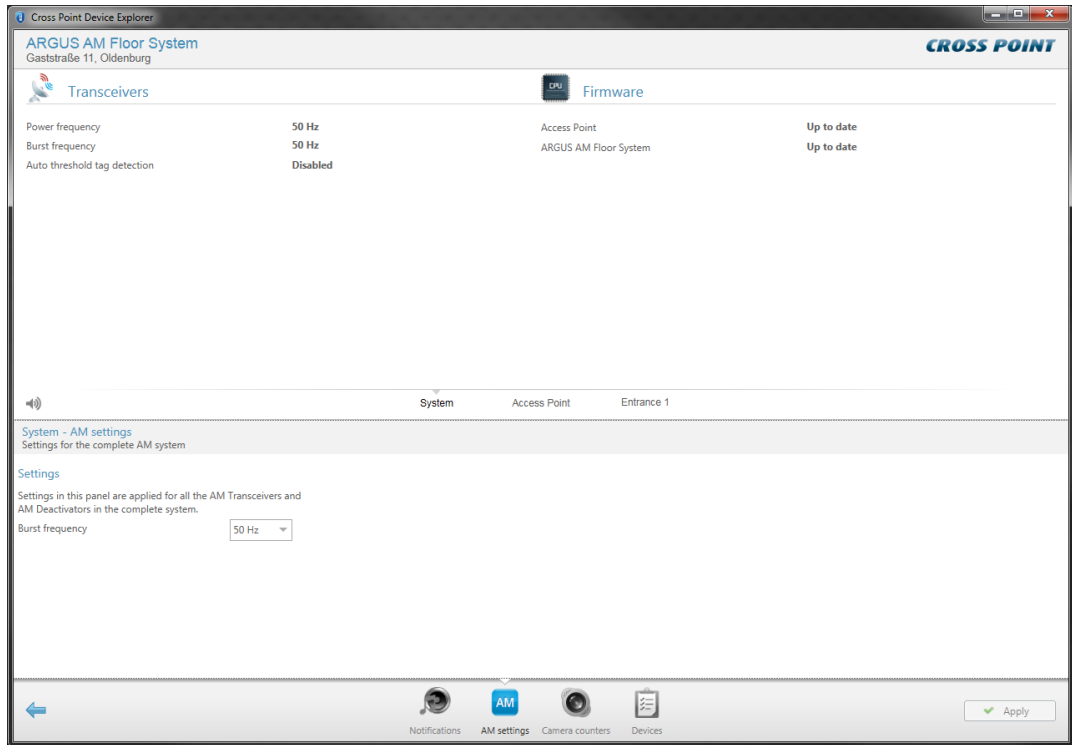


Figure 58: AM settings

The Burst frequency setting defines how many times per second a transmission burst is sent. The available options are:

@50Hz power frequency

50Hz (default) and 75Hz

@60Hz power frequency

60Hz (default) and 90Hz



The burst frequency setting is a system wide setting and will be applied for all connected AM devices. It is not possible to set different burst frequencies for different entrances.

13.6.3 Alarm history

The system's Alarm history screen shows a list of the tags that have been detected on the **entire** system (all devices in all entrances). The information is retrieved from the devices when you enter this screen, so it may take some time before the information is visible.

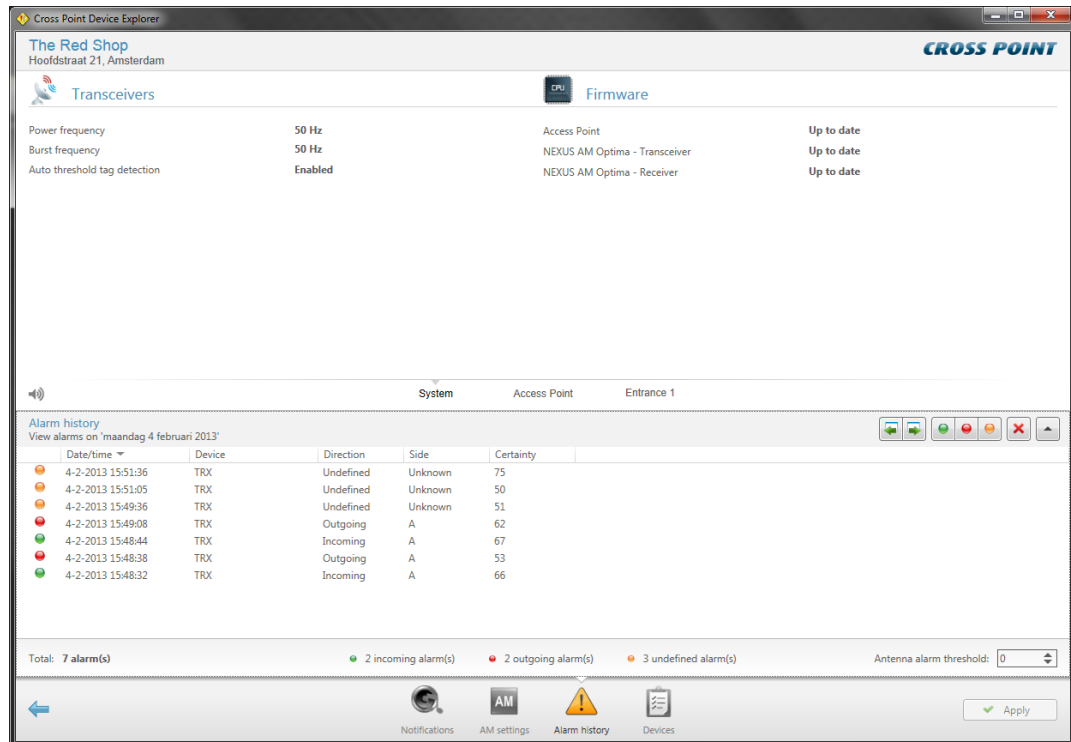





Figure 59: System – Alarm history

Click the Delete button  to delete all alarms in the list and to permanently remove them from all the connected antennas in this entrance.

All alarms are date & time stamped, so it's easy to find out when they occurred.

It is possible to view the alarm history per day for the last 30 days. Just click the Previous/Next day buttons   to scroll through the alarm history.

13.6.4 Devices

The Devices screen shows a list of all connected devices, their firmware status and some system settings.

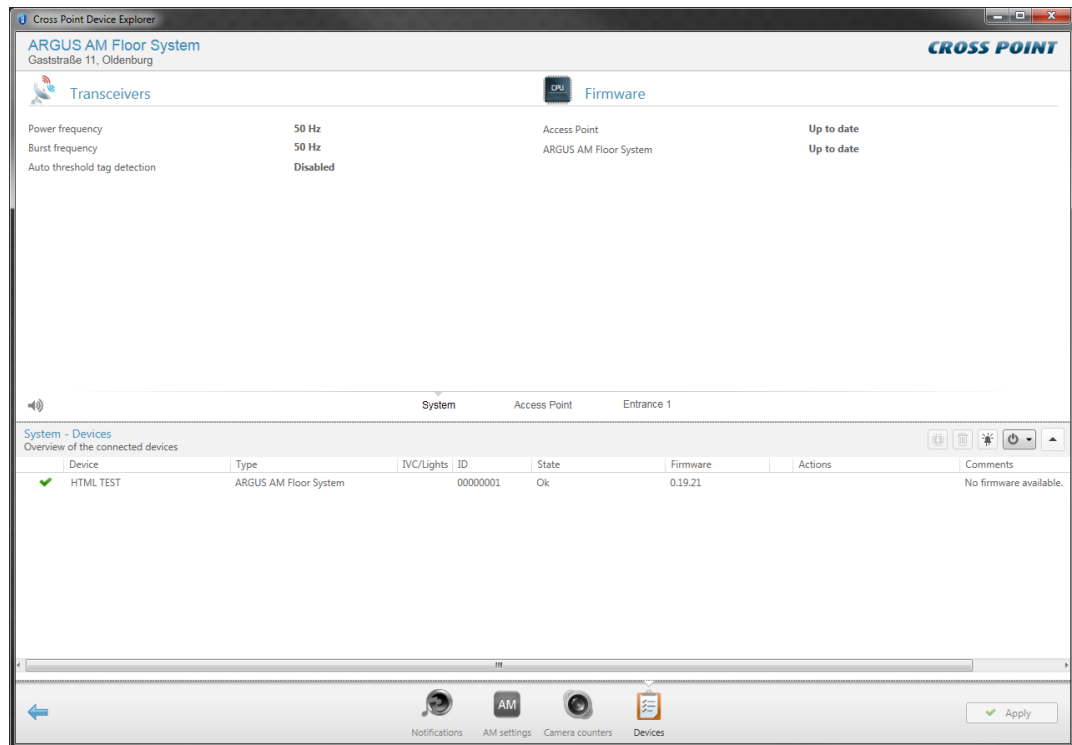



Figure 60: System – Devices

In the Devices list it is possible to:

- View the firmware version of each connected device
- Upload new device firmware
- Locate an individual device or all devices at once
- Reset an individual device or all devices at once
- Remove disconnected device(s)

Just hover over a device and the available buttons for that device will appear.

13.6.4.1 Locating a device

Press the **Locate** button  once to activate the buzzer and LEDs on the selected device. The Locate icon will start blinking and will keep on blinking. Press the Locate button again to stop locating the selected device.

13.6.4.2 Resetting a device

Press the **Reset** button to reset only the selected device.

13.6.4.3 Uploading new firmware

In case new firmware is available, you can automatically upgrade all devices of the same type by pressing the **Update all** button.

13.6.4.4 **Removing disconnected devices**

All devices that have the disconnected status can be removed permanently by pressing the **Remove disconnected devices** button.

13.6.4.5 **Turning all LEDs on/off**

The LEDs on all connected devices can be switched on at once by pressing the **Turn all LEDs on** button. This is useful to check whether all devices are connected, especially in large installation. Press this button again to switch all LEDs off again.

13.6.4.6 **Resetting all connected devices**

Press the **Reset all** button to reset all connected devices at once.

14 How to adjust the ARGUS AM Floor System

This section describes the adjustment procedure for the ARGUS AM Floor System. Please carefully follow this procedure for optimal functioning and performance.



Make pictures during the various installation steps and of the final placement of all the components in the floor BEFORE the floor is covered with concrete. Without being able to see exactly how the various components are placed in the floor, we will not be able to supply any useful support.

14.1 Pre-installation testing

Before doing any work to the floor, the ARGUS AM Floor System must be placed at the exact location where it is going to be installed. There it must be properly tested to determine the actual performance of the system. Make sure to configure the system exactly as planned:

- Place shielding tiles underneath the floor antennas,
- Use spacers between the shielding tiles and floor antennas,
- Place the antennas at the exact required horizontal distance of each other,
- Connect the system to your CCAP and Device Explorer and tune the antenna according to the instructions in section 13.5.7.4
- Adjust the sensitivity settings as described in section 13.5.7.1
- Determine the maximum detection height that can be achieved by presenting a hard tag and/or DR-label.
- In case the maximum detection height is valued as being too low, make alterations to the configuration described in the previous steps.

14.2 Prepare the floor and place antennas

Once you and your customer are satisfied with the achieved maximum detection height, determined in the pre-installation test described in the previous section, you can start working on the floor.

In case the floor is already prepared for placement of the floor antennas, you can continue to prepare for closing the floor once you are convinced that all work on the floor antennas and cabling has been done properly.

In case a cavity has to be created in the floor, excavation of the floor can now start, taking all precautions into consideration that come with working on the floor, as described in section 4.

Once the cavity has been created, place the shielding tiles, spacers and floor antennas in the cavity, following the instructions in section 7, the way you have also tested the system as described in section 14.1. Do not cover the antennas yet, but perform another detection test to determine if the previously determined maximum detection height can still be achieved.

14.3 Close the floor

Once you are convinced of the proper functioning of the system, the cavity in the floor can be closed, following the instructions given in section 4.

14.4 Final test

When the cavity in the floor has been closed with mortar, perform a final test to determine proper functioning of the system. Further configuration and fine-tuning must be done using Device Explorer.

15 Regulatory information

FCC WARNING

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

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IC WARNING

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (B)/NMB-3(B)