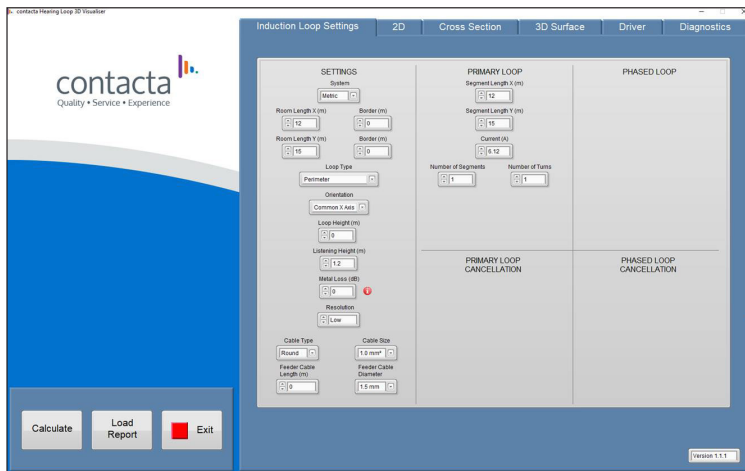


Hearing Loop Visualiser Calculation Software



User Guide

July 2020

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Overview

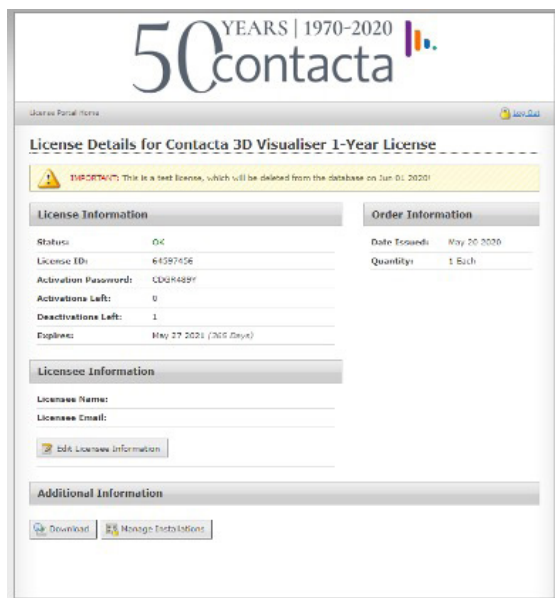
Our Large Area Loop Calculator is the quick and easy way to calculate what hearing loop drivers and cable lengths are required for your installations. It provides scaled hearing loop layout representation, calculates the current required, has selectable metal loss adjustment, and will automatically calculate a phased array.

Its unique Metal Loss Calculator feature enables users to enter readings into the calculator taken on-site, and provides an exact metal loss result for the site you are working on. This helps to ensure high-quality installation and the best performance of the system.

Note: For large area hearing loop installation instructions, consult Contacta's Large Area Hearing Loop Installation Guide.

Software Installation

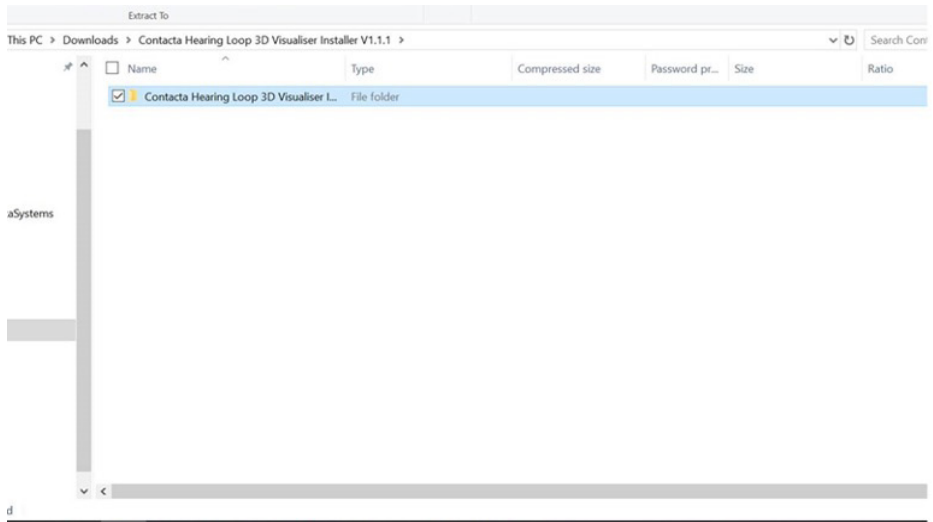
1. Ensure your PC display setting is set to a resolution of 1920 x 1080 at a scale of 100%. If this resolution is not set, the software will not be fully visible.
2. Make a note of your Licence ID and Activation Password.
3. Click on the DOWNLOAD link within the email you received
4. Next you will see the below screen. Click the DOWNLOAD button at the bottom.



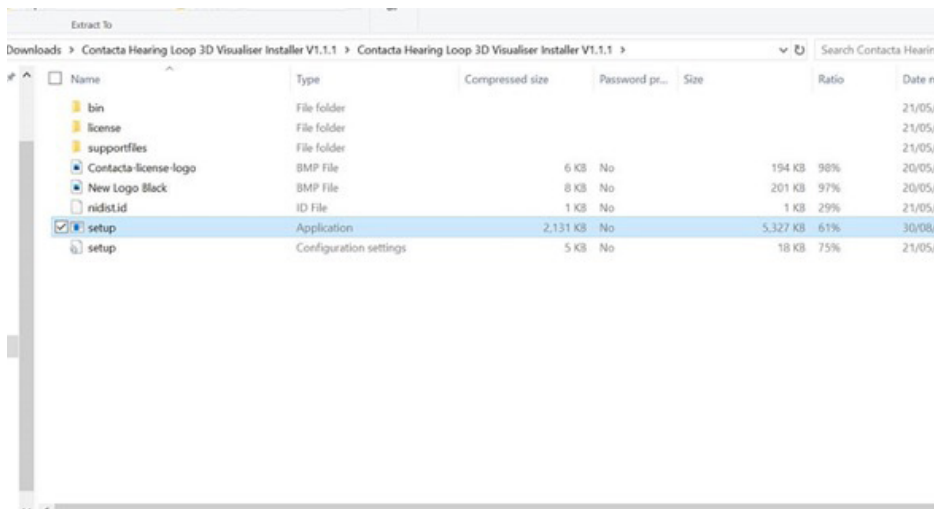
5. The download process will start.

Depending on your PC and internet connection, this step could take several minutes to complete. Upon completion, you will see the following folder on your PC.

Double click to open the folder:



6. In the next screen, select the **SETUP - APPLICATION** by double clicking.



7. The software will now start to unpack onto your PC. During this process you may see the below notification on your display.

If this happens, click on **MORE INFO** followed by **RUN ANYWAY** as

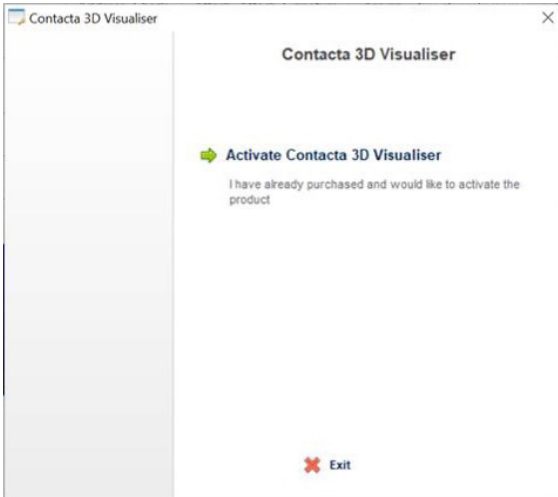
shown:



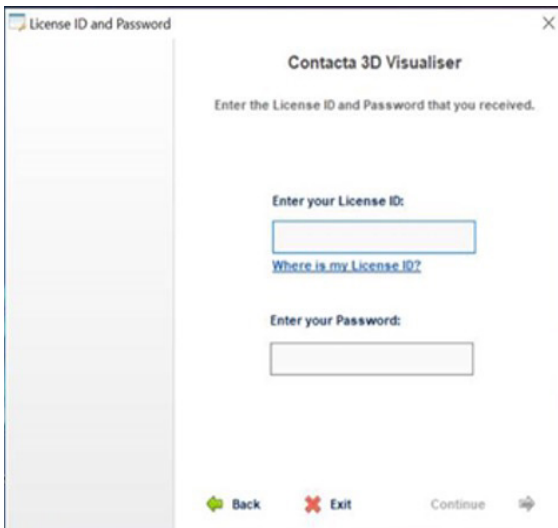
8. The software will complete its setup on your PC, placing the following shortcut on your desktop:



9. Double clicking the shortcut icon will launch your one-time login screen. Click on Activate Contacta 3D Visualiser then click the top selection on the next screen as shown:



10. Next you will see your final login screen. Use the credentials supplied within your email to sign in:



11. Fill in your credentials then click **Continue** and confirm again with '**Continue**' in the next screen.
12. The visualiser will launch and is ready to use. Use the desktop shortcut going forward to login directly.

Controls

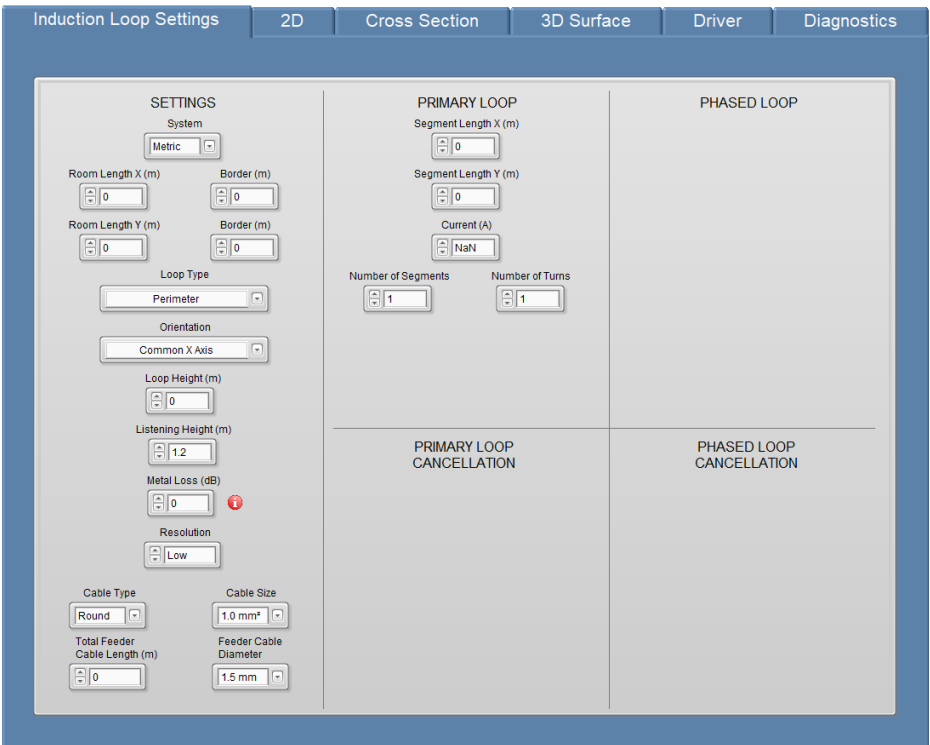


Calculate – Apply all input settings.

Load Report – Load visualiser data from a previously saved file.

Exit – Close the software.

Induction Loop Settings



Settings

System – Select metric or imperial units.

Room Length X – Enter the length of the area to be covered. Double-click inside the box to enter an exact value or use the up/down arrows for approximate values.

Room Length Y – Enter the width of the area to be covered. Double-click inside the box to enter an exact value or use the up/down arrows for approximate values.

Border – The border values are used to offset the loop cable from the border of a room to avoid obstacles in the room. The actual loop width/length will be automatically adjusted.

Note: The visualiser assumes the value is subtracted from both ends or sides of a room dimension. For example: if a room is 10 x 20 and an offset of 1 is entered for the longest dimension, the loop dimension will be 10 x 18; if the offset at one end of the loop is 1m then enter 0.5m (half the value of the offset).

Loop Type – Select the appropriate hearing loop configuration:

1. Perimeter
2. Figure of Eight
3. Phased Array / 222
4. Gapped Array / Multiloop
5. Phased Gapped Array / 313

Orientation –

1. Common X-Axis: Segments are placed in landscape orientation (the longest dimension is divided into equal segments).
2. Common Y-Axis: Segments are placed in portrait orientation (the shortest dimension is divided into equal segments).

Loop Height – Enter the height the loop cable is installed at; for

example, 0m for floor installation, 2.1m for many ceiling installations, etc.

Listening Height – Enter the height of intended users' hearing aids; for example, 1.2m for a seated listener, 1.7m for a standing listener, etc.

Metal Loss (dB) – If available, enter the level of effect from metal content within the building on the magnetic field. Click the red ! symbol for more information on how to calculate metal loss.

Resolution – Select the plotting resolution of the visualiser using the up/down arrows. A higher resolution will result in a smoother 2D image but increased calculation time.

Cable Type – Click on the menu to select the appropriate cable type:

1. Round
2. Flat

Cable Size – Click on the menu to select the appropriate cable size:

- | | |
|-----------------------|--------------------|
| • Round [metric] | • Round [imperial] |
| 1. 1.0mm ² | 1. 13 AWG |
| 2. 1.5mm ² | 2. 14 AWG |
| 3. 2.5mm ² | 3. 15 AWG |
| | 4. 16 AWG |
| | 5. 18 AWG |
| • Flat [metric] | • Flat [imperial] |
| 1. 10mm | 1. 13 AWG |
| 2. 12.5mm | 2. 14 AWG |
| 3. 25mm | 3. 15 AWG |
| | 4. 16 AWG |
| | 5. 18 AWG |

If the resulting voltage requirement level is too high, a larger diameter cable may be necessary.

Feeder Length Cable – Enter the total feeder cable length; this

includes both the cable that runs from your driver to the start of the loop and from the end of the loop back to the driver. For example, if the distance from your driver to the start of the loop is 10m, enter 20m feeder cable. Double-click inside the box to enter an exact value or use the up/down arrows for approximate values.

Feeder Cable Diameter – Click on the drop-down menu to select the appropriate CSA of the feeder cable:

[metric]

1. 1.5mm²

2. 2.5mm²

[imperial]

1. 13 AWG

2. 15 AWG

Primary Loop

Segment Length – In horizontal orientation, this automatically generated value is the longest side of the segment. In vertical orientation, it is the width of the segment.

Note: This value can be overridden if required. Defaults levels are recommended, however, and alterations may adversely impact the loop system's performance.

Segment Length – In horizontal orientation, this automatically generated value is the shortest side of the segment. In vertical orientation, it is the width of the segment.

Note: This value can be overridden if required. Defaults levels are recommended, however, and alterations may adversely impact the loop system's performance.

Current (A) – This automatically generated value is the approximate current level required to achieve a 0dB with a 1KHz sine wave in the centre of the loop layout.

Number of Segments – This automatically generated value is the optimal number of segments required to fit the dimensions of the looped area.

Note: This value can be overridden if required, such as when adding cancellation loops.

Number of Turns – Enter the number of times the loop cable is routed around the looped area. The default setting is 1 turn. If the value in the "Current (A)" box is too high, selecting 2 turns will halve the value. Toggle the Orientation setting to apply changes.

Note: Care should be taken when selecting 2 turns as the cable length will be doubled which will increase the voltage requirement of a loop driver.

Segment Pitch – This value is automatically calculated and only applies to Gapped Arrays and Gapped Phased Arrays. It equals the segment width plus the gap between the segments.

This value can be overridden if required. Defaults levels are recommended, however, and alterations may adversely impact the loop system's performance.

Primary Loop Cancellation

A cancellation loop can be added to the main loop to assist in controlling overspill. The following options are available in Horizontal orientation. Descriptions in brackets are shown when in Vertical orientation.

Cancellation Loop – Click on the drop-down menu to select the appropriate setting:

1. None
2. Left (Above) – Apply a cancellation loop to the left side or above the primary loop layout, as viewed in the 2D tab.
3. Right (Below) – Apply a cancellation loop to the right side or below the primary loop layout, as viewed in the 2D tab.
4. Both – Apply cancellation loops to both sides or above and below the primary loop layout, as viewed in the 2D tab.

[Right/Left] Loop Length X – The default value is 2.5 but this should be user defined for fine tuning of the overspill control.

Note: Loop width significantly effects the magnetic field pattern; experimentation with different values is therefore recommended until an optimum cancellation effect is achieved

[Right/Left] Loop Turns – Enter the number of times the loop cable is routed around the cancellation loop. The default setting is 1 turn.

Note: Care should be taken when selecting 2 turns. The field strength within the cancellation loop will be increased which will decrease the desired cancellation effect.

[Right/Left] Loop Offset – Enter the distance the cancellation loop is offset from an adjacent main loop segment.

Note: Loop offset significantly effects the magnetic field pattern. Experimentation with different values is recommended to achieve an optimum cancellation effect.

Phased Loop

Segment Length X – In horizontal orientation, this automatically generated value is the longest side of the segment. In vertical orientation, it is the width of the segment.

Note: This value can be overridden if required. Defaults levels are recommended, however, and alterations may adversely impact the loop system's performance.

Segment Length Y – In horizontal orientation, this automatically generated value is the shortest side of the segment. In vertical orientation, it is the width of the segment.

Note: This value can be overridden if required. Default levels are recommended, however, and alterations may adversely impact the

loop system's performance.

Current (A) – This automatically generated value is the approximate current level required to achieve a 0dB with a 1KHz sine wave in the centre of the loop layout.

Number of Segments – This automatically generated value is the number of segments required to fit the dimensions of the looped area.

Note: This value can be overridden if required, such as when adding cancellation loops.

Number of Turns – Enter the number of times the loop cable is routed around the looped area. The default setting is 1 turn. If the value in the "Current (A)" box is too high, selecting 2 turns will halve the value. Toggle the Orientation setting to apply changes.

Note: Care should be taken when selecting 2 turns as the cable length will be doubled which will increase the voltage requirement of a loop driver.

Segment Pitch – This value is automatically calculated and only applies to Gapped Arrays and Gapped Phased Arrays. It equals the segment width plus the gap between the segments.

Overriding this value is not advised. This value significantly alters the performance of the loop system.

Phased Loop Cancellation

A cancellation loop can be added to the main loop to assist in controlling overspill. The following options are available in Horizontal orientation. Descriptions in brackets are shown when in Vertical orientation.

Cancellation Loop – Click on the drop-down menu to select the appropriate setting. When adding cancellation loops, reduce the number of segments used in the primary/phased array Number of

Segments section (see pages 11 and 13) to fit the layout into the loop area dimensions.

1. None
2. Left (Above) – Applies a cancellation loop to the left side or above the primary loop layout, as viewed in the 2D tab.
3. Right (Below) – Applies a cancellation loop to the right side or below the primary loop layout, as viewed in the 2D tab.
4. Both – Applies cancellation loops to both sides or above and below the primary loop layout, as viewed in the 2D tab.

[Right/Left] Loop Length X – The default value is 2.5 but this should be user defined for fine tuning of the overspill control.

Note: Loop width significantly impacts the magnetic field pattern. Experimentation with different values is recommended to achieve an optimum cancellation effect.

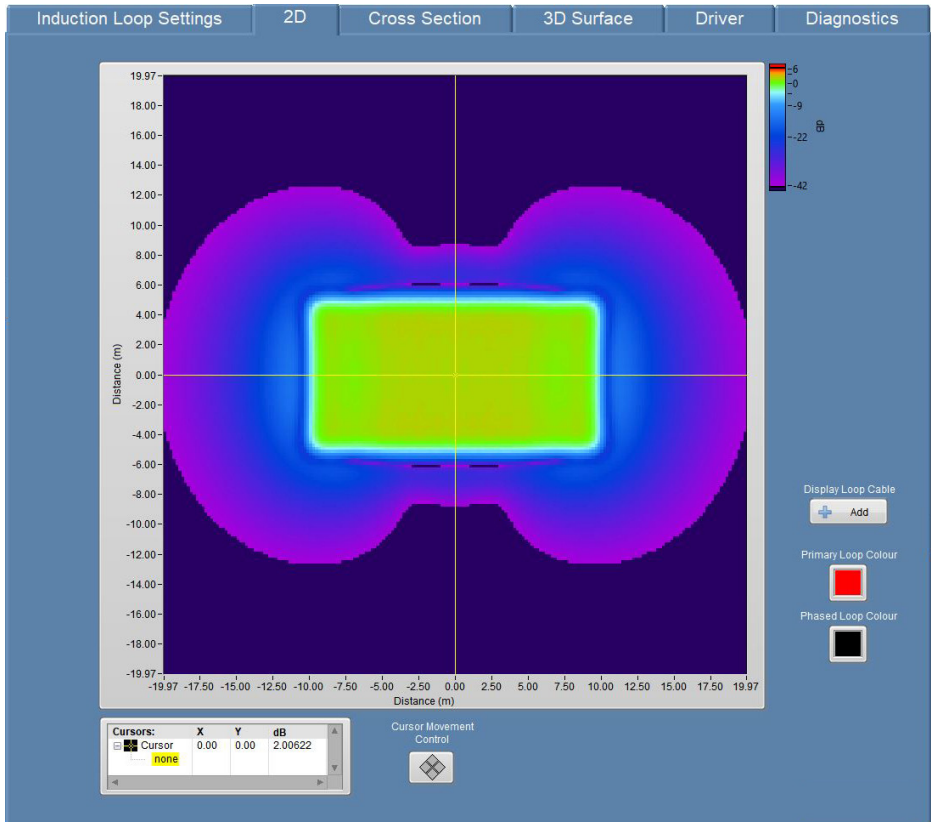
[Right/Left] Loop Turns – Enter the number of times the loop cable is routed around the cancellation loop. The default setting is 1 turn.

Note: Care should be taken when selecting 2 turns. The field strength within the cancellation loop will be increased which will decrease the desired cancellation effect.

[Right/Left] Loop Offset – Enter the distance the cancellation loop is offset from an adjacent main loop segment.

Note: Loop offset significantly effects the magnetic field pattern. Experimentation with different values is recommended to achieve an optimum cancellation effect.

2D



Cursors

Cursor 0 (X / Y) – This is the position of the crosshairs relative to the X and Y axis on the 2D view.

+/- – Clicking on this button opens a sub menu displaying the X/Y values (which can be adjusted by double-clicking on the relevant value) and the dB level for the point at which the crosshairs intersect (relative to the listening plane height).



Cursor Movement Control – The diamond-shaped cursor button

allows users to move the crosshairs in the X-Y directions in increments determined by the resolution selected on the array settings page.

Crosshairs can also be moved by click-and-holding the crosshairs on the render and dragging them to the desired location.

Distance Scale

Distance scale is displayed in either meters or feet dependant on whether metric or imperial is chosen in the induction loop settings tab.

Dimensions are measured from the centre if the loop layout towards the edges in the directions of X and Y.

The scale is automatically set to match the relevant layout. Zoom in or out of the image by double clicking on the values at each end of the X and Y scales and entering new values; any new values entered should be identical to maintain the aspect ratio.

Display Loop Cable

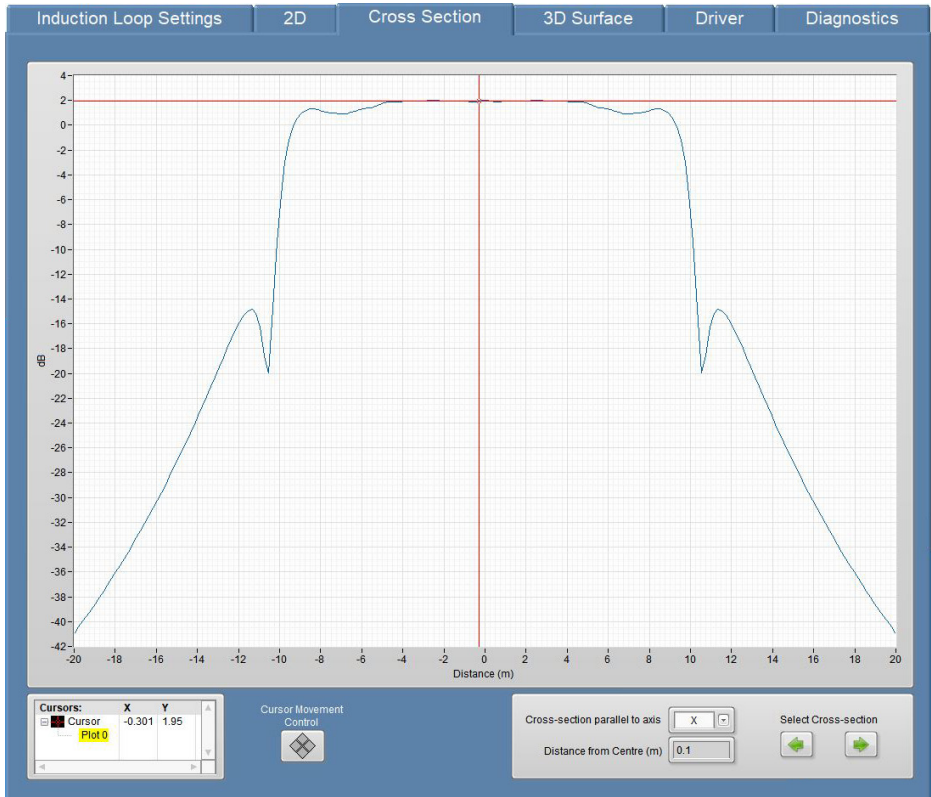
Add / Remove – Toggle the overlay of the loop layout cables.

Note: If scale zooming has been adjusted, this button must be toggled to reset the cable overlay so it fits the adjusted view

Primary Loop Colour / Phased Loop Colour – The colour of overlay cables can be altered to suit specific requirements. The default setting is red for Main Array and black for Phased Array.

To select a colour, click on the box and choose a new colour. RGB values can be entered by clicking on the colour pallet and entering specific values.

Cross Section




This tab shows a side view cross section of the loop system. As a default the slice is directly through the middle of the loop and can be viewed from either the X or Y axis.

The crosshair can be positioned along the 'Distance' axis. The peak dB level will then be displayed in 'Cursors' box.

Cursors

The Cursors box displays the distance from the centre of the loop (X) and the dB level at that location (Y) relative to the listening plane and the slice position through the loop.

X = Distance from Centre of Loop – This value can be changed in three ways.

1. Clicking on the + sign in the cursors box and then double clicking the value in the X column which appears, then entering the new value.
2.  Cursor movement control
3. Clicking and dragging the crosshairs to the desired location.

Y = dB Level – The dB level is at the position of the crosshair in relation to the listening plane height and slicing position.

Cursor Movement Control – The navigation arrows are used to move the crosshairs (left and right).

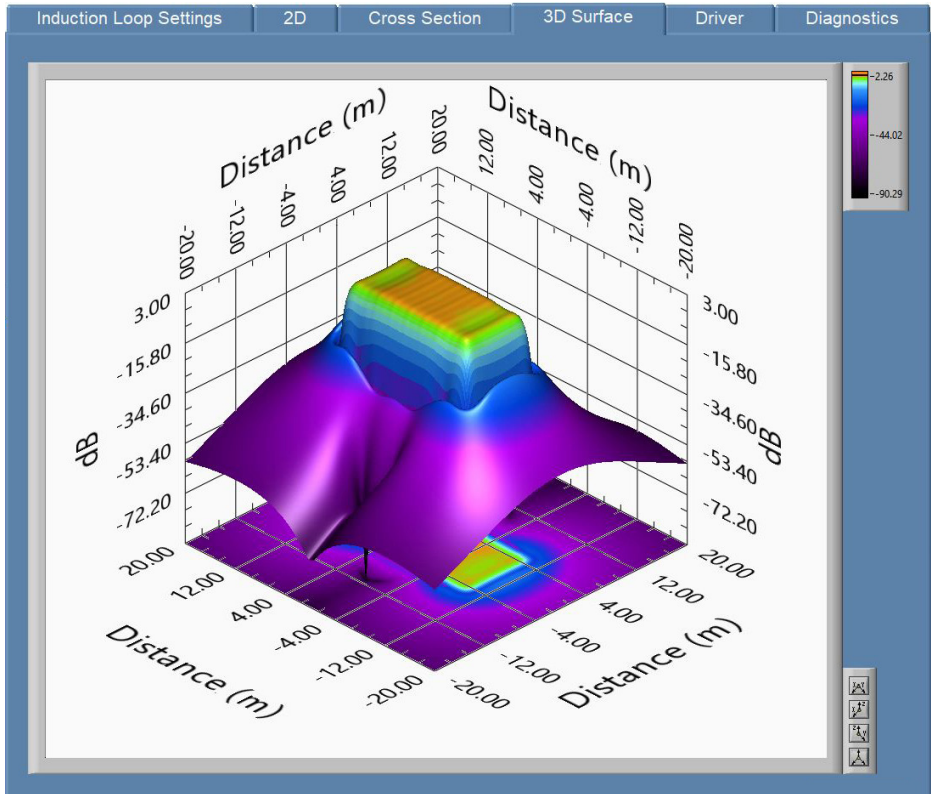
Cross-Section Parallel To Axis

The cross-section of the loop layout can be viewed from either the X axis or Y axis. To select the desired view, click on the drop-down box and select X or Y.

Distance from Centre – This value is the distance from the cross-section slice to centre of the loop in the selected Axis view.

Select Cross-Section – The arrows in this section adjust the value of the slice's position relative to the centre of the loop. Positive values move the slice away from the viewer while negative values move the slice towards the viewer.

3D Surface



The 3D Surface has four display options for hearing loop field strength. These can be selected from the bottom right of the screen:



Top View



Cross-Section Parallel to the Y



Cross-Section Parallel to the X



3D View

Driver



3 Available Drivers Shows the number of available drivers for your project.



Up / Down Arrows – Scrolls through the available loop drivers for the loop design.

Required Voltage (V) – This value is the voltage required to meet the EN60118-4 standard regarding voltage clipping for the selected cable.

Driver Voltage – This value is the rated output voltage of the selected loop driver.

Voltage Headroom (dB) – This value is the amount (in dB) of spare voltage the loop driver has in reserve should there be more metal loss than expected.

Required Current (A) – This value is the current required to achieve 0dB in the centre of the loop at the listening plane chosen. This is subject to metal loss entered in the 'Induction Loop Settings' tab (see page 9).

Driver Current (A) – This value is the rated current of the selected loop driver.

Current Headroom (dB) – This value (in dB) is the amount of spare current the loop driver has in reserve (should there be more metal loss than expected).

Save Your Contacta Report – Save details as a report document.

Driver Description – A brief overview of the loop driver selected, highlighting some of the driver's specifications.

Diagnostics

Induction Loop Settings	2D	Cross Section	3D Surface	Driver	Diagnostics
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Primary Loop Cable Length (m)	115.1	Phased Loop Cable Length (m)	119.948
Primary Loop Resistance	2.24445	Phased Loop Resistance	2.33899
L, Inductance for primary array	0.0001723	L, Inductance for phased array	0.0001723
X, Max Reactance @ 1600Hz	3.00227	Feeder Cable Resistance	0
R, Max Resistance (Ohms)	2.33899	Z, Maximum Impedance	2.91086

Primary / Phased Loop Cable Length – Length of loop cables.

Primary / Phased Loop Resistance – The value of the resistance of the primary array.

L, Inductance for Primary / Phased Array – The value of the inductance of the array.

Z, Impedance for Primary / Phased Array – The value of the impedance of the array.

X, Max Reactance @ 1600Hz – The value of impedance at 1600Hz.

R, Max Resistance – The value of the highest loop cable resistance combined with the feeder cable resistance.



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