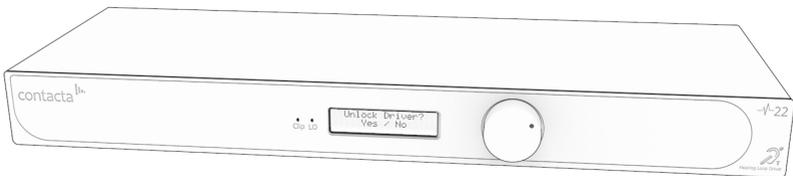


contacta 

 series

V22

Hearing Loop Driver



# Installation & User Guide

May 2021

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Contacta has a policy of continuous product development, therefore small specification changes may not be reflected in this manual. Images, labels, packaging, accessories and product colours are subject to change without notice.

# Product Overview

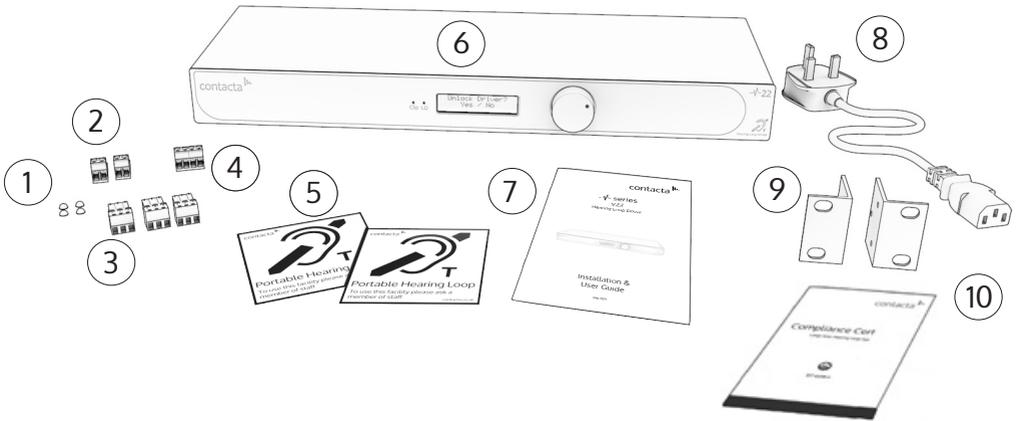
Our highly efficient V22 hearing loop driver is built around high-end technology designed for the flagship V Series PRO hearing loop driver range. It is suitable for driving the most demanding perimeter loop systems in medium to large venues.

With a Class-D amplifier output stage, the V22 delivers a high enough current to drive even the toughest loop loads.

The audio subsystem is built around an advanced DSP core. Combined with a microprocessor control that ensures peak performance, the driver uses cutting edge technology to deliver peak performance.

**Note:** For large area hearing loop installation instructions, consult the Large Area Hearing Loop Installation Guide.

# Components

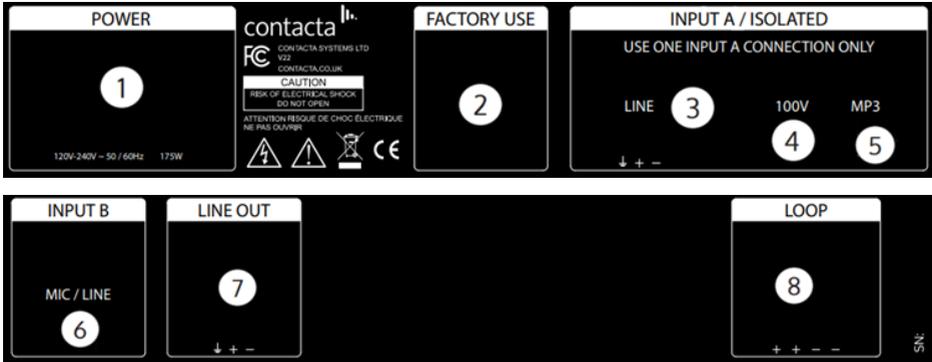


1. Rubber Feet x 4
2. 2-way 3.5mm Euro-Block Connector x 2
3. 3-way 3.5mm Euro-Block Connectors x3
4. 4-way Terminal Block
5. Hearing Loop Stickers
6. V22 Hearing Loop Driver
7. User Guide
8. IEC Power Lead\*
9. Rack Mounting Ears
10. Compliance Certificate

\*Plug type varies by country.

**Cable & Equipment:** A length of loop cable determined by the loop design is also required. Hearing loop drivers also require ancillary equipment for audio feeds, such as a microphone or sound system.

# Connections



1. Power Supply Input\*
2. Factory Use (no user input)
3. Line Input - 3.5mm Euro-block balanced line input
4. 100V Line Input - 3.5mm Euro-block transformer isolated & balanced
5. MP3 (Line Input)- 3.5mm Euro-block transformer isolated & balanced
6. Line/Microphone - Switchable phantom power (12V) XLR
7. Line Output – 3.5mm Euro-block
8. Loop Output - 5.08mm 4-way terminal block

**\*Power Sources** - This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. The primary method of isolating the amplifier from the mains supply is to disconnect the mains plug. Ensure that the mains plug remains accessible at all times. Unplug the AC power cord from the AC outlet if the unit will not be used for several months or more.

# Connection Examples

## XLR to Euroblock (balanced)



## Unbalanced to Euroblock



## Isolated and Balanced



# Suitable Cable Lengths

The tables in this section show the approximate maximum cable lengths for differing maximum required currents to achieve a 400mA/m field strength.

Loop impedance (at 1.6kHz) should be less than voltage capability of the driver (22V) divided by the required current.

## V22 Single-Turn (Metric)

Current	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A
Impedance	22.6Ω	11.3Ω	7.53Ω	5.65Ω	4.52Ω	3.77Ω	3.23Ω	2.83Ω	2.51Ω	2.26Ω	2.05Ω	1.88Ω

Cable Type		Cable Length												
Max. Cable Length	Round Cable (AWG)	1.5mm	970.99m	485.50m	323.66m	242.75m	194.20m	161.83m	138.71m	121.37m	107.89m	97.10m	88.27m	80.92m
		2.5mm	1091.74m	545.87m	363.91m	272.94m	218.35m	181.96m	155.96m	136.47m	121.30m	109.17m	99.25m	90.98m
	Flat Cable (Width)	10mm	614.41m	307.21m	204.80m	153.60m	122.88m	102.40m	87.77m	76.80m	68.27m	61.44m	55.86m	51.20m
		12.5mm	1161.97m	580.99m	387.32m	290.49m	232.39m	193.66m	166.00m	145.25m	129.11m	116.20m	105.63m	96.83m
		25mm	1538.27m	769.13m	512.76m	384.57m	307.65m	256.38m	219.75m	192.28m	170.92m	153.83m	139.84m	128.19m

## V22 Single-Turn (Imperial)

Current	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A
Impedance	22.6Ω	11.3Ω	7.53Ω	5.65Ω	4.52Ω	3.77Ω	3.23Ω	2.83Ω	2.51Ω	2.26Ω	2.05Ω	1.88Ω

Cable Type		Cable Length												
Max. Cable Length	Round Cable (AWG)	18AWG	2552.86ft	1276.43ft	850.95ft	638.21ft	510.57ft	425.48ft	364.69ft	319.11ft	283.65ft	255.29ft	232.08ft	212.74ft
		14AWG	3408.47ft	1704.23ft	1136.16ft	852.12ft	681.69ft	568.08ft	486.92ft	426.06ft	378.72ft	340.85ft	309.86ft	284.04ft
	Flat Cable (Width)	18AWG (equiv.)	2871.76ft	1435.88ft	957.25ft	717.94ft	574.35ft	478.63ft	410.25ft	358.97ft	319.08ft	287.18ft	261.07ft	239.31ft
		14AWG (equiv.)	4538.17ft	2269.08ft	1512.72ft	1134.54ft	907.63ft	756.36ft	648.31ft	567.27ft	504.24ft	453.82ft	412.56ft	378.18ft

## V22 Double-Turn Hearing Loop (Metric)

Current	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A
Impedance	22.6Ω	11.3Ω	7.53Ω	5.65Ω	4.52Ω	3.77Ω	3.23Ω	2.83Ω	2.51Ω	2.26Ω	2.05Ω	1.88Ω

Cable Type			Cable Length											
Max. Cable Length	Round Cable (AWG)	1.5mm	650.61m	325.31m	216.87m	162.65m	130.12m	108.44m	92.94m	81.33m	72.29m	65.06m	59.15m	54.22m
		2.5mm	683.46m	341.73m	227.82m	170.87m	136.69m	113.91m	97.64m	85.43m	75.94m	68.35m	62.13m	56.96m
	Flat Cable (Width)	10mm	537.58m	268.79m	179.19m	134.39m	107.52m	89.60m	76.80m	67.20m	59.73m	53.76m	48.87m	44.80m
		12.5mm	831.19m	415.60m	277.06m	207.80m	166.24m	138.53m	118.74m	103.90m	92.35m	83.12m	75.56m	69.27m
		25mm	984.36m	492.18m	328.12m	246.09m	196.87m	164.06m	140.62m	123.05m	109.37m	98.44m	89.49m	82.03m

## V22 Double-Turn Hearing Loop (Imperial)

Current	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A
Impedance	22.6Ω	11.3Ω	7.53Ω	5.65Ω	4.52Ω	3.77Ω	3.23Ω	2.83Ω	2.51Ω	2.26Ω	2.05Ω	1.88Ω

Cable Type			Cable Length											
Max. Cable Length	Round Cable (AWG)	18AWG	1864.96ft	932.48ft	621.65ft	466.24ft	372.99ft	310.83ft	266.42ft	233.12ft	207.22ft	186.50ft	169.54ft	155.41ft
		14AWG	2131.29ft	1065.65ft	710.43ft	532.82ft	426.26ft	355.22ft	304.47ft	266.41ft	236.81ft	213.13ft	193.75ft	177.61ft
	Flat Cable (Width)	18AWG (equiv.)	2254.91ft	1127.45ft	751.64ft	563.73ft	450.98ft	375.82ft	322.13ft	281.86ft	250.55ft	225.49ft	204.99ft	187.91ft
		14AWG (equiv.)	2958.49ft	1479.24ft	986.16ft	739.62ft	591.70ft	493.08ft	422.64ft	369.81ft	328.72ft	295.85ft	268.95ft	246.54ft

# Driver Area Coverage

**Note:** A full site survey of an installation area is recommended for optimal loop design.

Areas detailed in the table below are valid only when the following conditions are met:

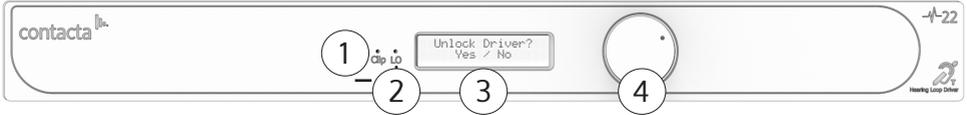
1. Area is at the maximum current the driver is capable of delivering without voltage clipping at 1.6KHz
2. Loop layout is designed to achieve 0dB in the centre
3. 25mm x 0.1mm flat copper cable
4. Loop is installed in the floor
5. Listening height 1.2m (large perimeter loops may have areas where the actual signal level is higher than required)

Voltage	Current
22V	12A

Area		
1:1	1:2	1:3
715.0sqm	899.0sqm	961.0sqm
7692.0sqft	9672.0sqft	10338.0sqft

# Controls

## Front Panel Overview

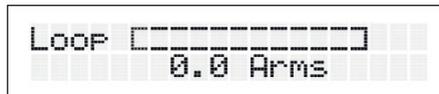


1. **Clip Status Light** - When lit, this status LED indicates the signal on the hearing loop output is clipping (see Troubleshooting on page 25 for appropriate solutions).
2. **Open Circuit Loop** - Indicates the status of the Loop integrity
3. **Display Screen** - Indicates the status of the Loop Output, displays menu and adjustment options.
4. **Control Dial** - Used for unlocking and making adjustments.

## Start-Up Sequence

When power is applied the hearing loop driver will automatically perform an analysis of the loop connected to the output.

When the analysis is complete, the following screen should display:

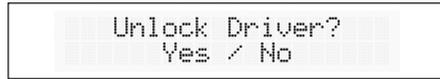


Rotating or pressing the control will display the unlock screen.

Should an error occur during start up, please consult warning and error messages page 26.

# Locking/Unlocking the Hearing Loop Driver

The hearing loop driver will power up in Output Current Display Mode and will be locked from entering Adjustment Mode.



## Unlock the Driver

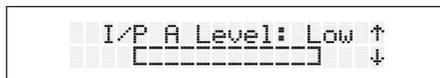
1. To unlock the hearing loop driver, press the control dial, and when prompted "Unlock driver?" click "Yes."
2. Enter the passcode **2239**:
  - a. Rotate the control clockwise to select the first required digit.
  - b. Press the control dial in to select the digit.
  - c. Repeat steps (a) and (b) until all the digits have been selected.

**Note:** Entering the wrong code returns the driver to the lock screen.

## Modes

### Main Menu

After being unlocked, the hearing loop driver will display the main menu. This is indicated by up and down arrows on the display screen.



When in this mode, rotating the hearing loop driver's control dial clockwise will move the screen to the next menu item and rotating the dial anti-clockwise will move it to the previous menu item.

The menu options are as follows:

1. Loop Output
2. AGC On/Off
3. Input A/Isolated
4. Input B [Phantom Power]
5. High Frequency Compensation
6. Input High Pass Filter

- 7. Acoustic Delay
- 8. Backlight Timeout
- 9. Diagnostics

### Adjustment Mode

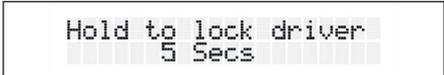
Press the control dial in to enter Adjustment Mode; the arrows on the display screen will move to a left and right position. Rotate the dial clockwise or anti-clockwise to make the adjustment. Press the control dial in to confirm the selection and return to the main menu.



If the control dial is not used for 120 seconds when in Adjustment Mode the hearing loop driver will revert to the main menu, with Loop Output as the default screen.

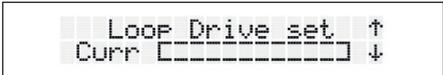
### Locking/Rebooting the Unit

To lock the V22 when not in adjustment mode, press and hold the control dial for 5 seconds.



If an error message is displayed, reboot the driver by pressing and holding the control dial for 5 seconds.

### Loop Output



The hearing loop driver's Loop Output section displays the real-time output current in 1A steps.

## Adjustments



In Adjustment Mode, the real-time output current is displayed on the top line in 1A steps. The bottom line indicates the strength of the loop output level adjustment.

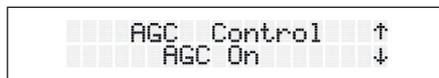
To alter the loop output level, enter Adjustment Mode:

- To increase the loop output level, rotate the control dial clockwise.
- To decrease the loop output level, rotate the control dial anti-clockwise.
- Press the control dial once to confirm the selection and return to the main menu.

## AGC On/Off

The AGC function can be switched on or off from this screen. For normal set-up and operation and optimal performance it is recommended the AGC is left on.

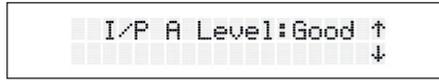
## Adjustments



Rotating the control dial clockwise or anti-clockwise in Adjustment Mode will toggle the AGC on or off. Press the control dial once to confirm the selection and return to the main menu.

When AGC is off, an asterisk will appear in the corner of each screen to serve as a reminder that the AGC is off.

# Input A/Isolated



Input A/Isolated can be adjusted over a range of 47dB. The text on the display indicates if the correct line level has been achieved:

- "Low" indicates the line level is too low for the automatic gain control to operate.
- "Good" indicates the level is at an optimum level for the automatic gain control to operate.
- "High" indicates the level is too high and signal clipping may occur. Signal clipping will also be shown by the LED

## Adjustments

Enter Adjustment Mode and alter the level displayed on the bar until the text displays 'Good'. It is recommended that at least 5 blocks in the adjustment block are filled.

- To increase the input level, rotate the control dial clockwise.
- To decrease the input level, rotate the control dial anti-clockwise.
- Press the control dial once to confirm the selection and return to the main menu.

# Input B



Input B can be used for either line level or microphone level signals and can be adjusted over a range of 47dB.

The top line of the display indicates if the correct microphone input level has been achieved:

- "Low" indicates the level is too low for the automatic gain control to operate.
- "Good" indicates the level is at an optimum level for the automatic gain control to operate.

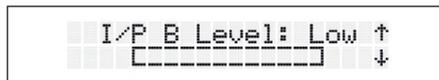
- “High” indicates the level is too high and signal clipping may occur. Signal clipping will also be shown by the LED.

## Adjustments

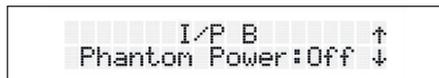
Enter Adjustment Mode and alter input level displayed on the bar until the text displays ‘Good’. It is recommended that at least 5 blocks in the adjustment block are filled.

- To increase the input level, rotate the control dial clockwise.
- To decrease the input level, rotate the control dial anti-clockwise.
- Press the control dial once to confirm the selection and return to the main menu.

## Phantom Power (Input B)



Phantom power for a connected microphone is set off as the default setting. If this input is required as a Microphone input, Phantom power will need to be switched on.



## Adjustments

Rotating the control dial clockwise or anti-clockwise in Adjustment Mode will toggle the phantom power on or off. Press the control dial once to confirm the selection.

# High-Frequency Compensation



There are 7 levels of high-frequency compensation available to adjust for metal loss. Your hearing loop driver will have high-frequency compensation turned to the lowest setting as its default.

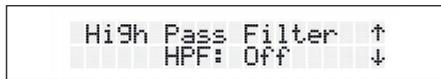
## Adjustments



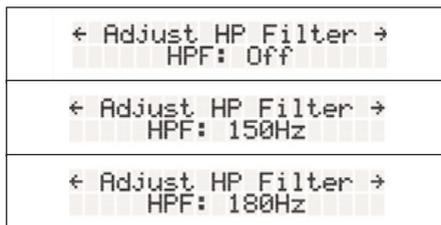
To alter the high frequency compensation level, enter Adjustment Mode:

- To increase the high-frequency compensation level, rotate the control dial clockwise.
- To decrease the high-frequency compensation level, rotate the control dial anti-clockwise.
- Press the control dial once to confirm the selection and return to the main menu.

# Input High Pass Filter



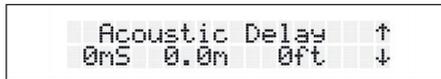
This feature removes low-frequency sounds from the hearing loop when background noise such as air conditioners might impact users. Select either 150Hz or 180Hz if required.



## Adjustments

Rotating the control dial clockwise or anti-clockwise in Adjustment Mode to toggle between the 150Hz and 180Hz cut-off or turn the filter off. Press the to dial once to confirm the selection and return to the main menu.

## Acoustic Delay



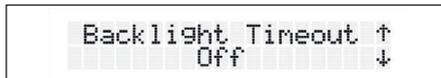
In theatres, stadiums, and other large venues, sound sent from speakers will be impacted by the speed of sound, whereas audio sent through a hearing loop will reach a user instantly. This means the two sounds must be aligned or users will hear a constant echo.

## Adjustments

Alter syncing and compensate for latency.

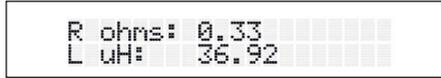
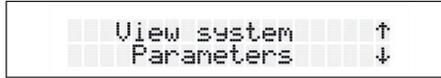
- To increase the delay, rotate the control dial clockwise.
- To decrease the delay, rotate the control dial anti-clockwise.
- Press the control dial once to confirm the selection and return to the main menu.

## Backlight Timeout



Rotating the control dial clockwise or anti-clockwise in Adjustment Mode will toggle the screen's backlight on or off. Press the control dial once to confirm the selection.

# Diagnostics

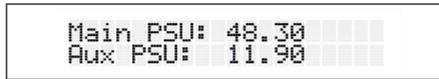


This screen displays the connected loop's resistance (R ohms) and loop Inductance (L uH).

Rotating the control dial clockwise displays the internal heatsink temperature and fan PWM (100% is fan full speed):



Rotating the control dial clockwise again displays the internal power supply voltages:



Rotating the control dial clockwise again displays the UID unique identification for the driver.

# Hearing Loop Setup

**Warning:** Ensure the AGC setting is on before proceeding.

To ensure optimal performance, setup should be performed in following order:

**Step 1: Background Noise Level** (see page 20)

**Step 2: Metal Loss** (see pages 20-21)

**Step 3: Output Level and Clipping** (see page 21-22)

**Step 4: Field Uniformity** (see page 22-23)

**Step 5: Final Output Level Adjustment** (see page 24)

**Step 6: Input Signal Level Adjustment** (see page 24)

## Required for Setup

- TSG - Contacta Test Signal Generator (TSG1)
- FSM - Contacta Field Strength Meter (IL-CONTACTA-FSM)
- Tripod or similar for mounting the FSM is recommended
- 'Compliance Certificate' document

### Note:

Throughout set-up, record values on the provided Compliance Certificate document whenever you see the following icon:



The Compliance Certificate document confirms compliance with IEC-60118:4 if your values are within acceptable levels.

It is highly recommended that you retain a copy of the completed Compliance Certificate document for your records and provide a copy to the relevant facilities manager.

## Step 1: Background Noise Level

This test should be performed prior to loop installation.

1. Set up the FSM, ensuring that the two vertical arrows in the top-right corner of the device are placed at the correct height:

-  • 1.2 metres (3' 9") for seated user.  
• 1.7 metres (5' 6") for standing users.

A tripod or similar for mounting the FSM is recommended.

2. Any lights or equipment normally active in the surrounding area should be turned on to ensure an accurate testing environment.
3. Set the FSM to the Background Noise mode – "A-weighted".
4.  Measure and note the background noise level throughout the looped area on the Compliance Certificate document.
5. Listen to the loop through the FSM (A-weighted) or a loop listener (A-weighted). Note and demonstrate any interference to the customer which may not be heard through a hearing instrument.
6. Background magnetic noise should ideally be between -32dB and -60dB. If the readings noted pass the Compliance Certificate document's requirements, move on to Step 2: Metal Loss.

## Step 2: Metal Loss

1. Set up the FSM, ensuring that the two vertical arrows in the top-right corner of the device are placed at the correct height:

-  • 1.2 metres (3' 9") for seated user.  
• 1.7 metres (5' 6") for standing users.

A tripod or similar for mounting the FSM is recommended.

2. Connect the TSG to the line input of the hearing loop driver.

3. Set the TSG to the 1kHz setting.
4. Set the FSM to the Third Octave F= 1000Hz setting.
5. Adjust the line level until "Good" is displayed.
6. Adjust the drive level to achieve 2 amps of output current.
7.  Set the TSG to the pink noise setting and record the value measured by the FSM.
8.  Set the FSM to the Third Octave F= 100Hz setting and record the value measured.
9.  Set the FSM to the Third Octave F= 5000Hz setting and record the value measured.
10.  If the difference between the values measured at 1000Hz and 5000Hz is less than 3dB, record the results and move on to Step 3: Output Level and Clipping. If the difference is higher than 3dB, move on to step 11.
11. Increase the HF comp and repeat steps 3 to 10.

## Step 3: Output Level and Clipping

 Note: This test should be performed as briefly as possible.

1. Set the TSG to the 1kHz setting.
2. Set the FSM to the RMS/Peak A-Weighted mode.
3. Adjust the drive level to achieve 2 amps of output current.
4. Measure the field strength. Achieve 0dB by using the FSM's indicated field strength to work out the extra current required. For example: if the measured field strength on the FSM is (A-RMS) -6dB then 6dB (2X) extra current will be required to achieve 0dB (see Note 1 on page 24).

Note: If more than 15.5dB is required to achieve 0dB, a different

loop design or more powerful driver is required. This is potentially due to metal loss.

5. Briefly alter the current to the desired level. For instance, the example in step 4 requires 4 amps of current.
6. The field strength will now be 0dB +/- 1dB.
7.  Quickly record the current required to achieve 0dB field strength. Now switch the TSG to 1.6kHz.
8. Confirm that the Clip LED remains unlit.
9. If the driver's front panel Clip LED remains unlit, return the TSG to 1kHz and reduce output current to 2 amps move on to Step 4: Field Uniformity.

If the driver's front panel Clip LED is lit, the driver is clipping. This means the loop connected is too long, and therefore:

1. The system is not IEC60118-4 compliant
2. The sound will be distorted
3. The driver may be susceptible to damage and warranty voided

Perform one of the following solutions and repeat until there is no clipping:

1. Reduce the loop current
2. Reduce the length of the loop
3. Use a heavier gauge of cable
4. Try a two-turn loop
5. Use a higher voltage driver

## Step 4: Field Uniformity

1. Set up the FSM. Ensure that the two vertical arrows in the top-right corner of the FSM are placed at the correct height:

-  • 1.2 metres (3' 9") for seated user.  
• 1.7 metres (5' 6") for standing users.

A tripod or similar for mounting the FSM is recommended.

2. Reduce the loop output current to 2 amps.
3.  Set the FSM to the RMS/Peak A-Weighted mode and record the value measured by the FSM in the centre of the loop.
4.  Move the FSM to other positions within the looped area and record the values measured by the FSM.
5. The differences measured in other positions should not be greater than +/- 3dB of that measured in the first position.
6. Repeat steps 3 to 5 to create a suitable map of the area looped.

## **Step 5: Final Output Level Adjustment**

1. Set the TSG to 1kHz.
2. Adjust the output current to the level recorded in Step 3: Output Level and Clipping (7) on page 22. Once the current is set, disconnect the TSG.

## **Step 6: Input Signal Level Adjustment**

1. Connect the system signal source.
2. Adjust the input level (line/mic) level until "Good" is displayed on audio peaks.
3. The system is now set up.

## Note 1:

When adjusting the output current, if a level of 6 amps is reached and yet **the field strength is still below -6dB**, the correct field strength **will not** be achieved.

This is caused by either an incorrect loop design or installation, more metal loss than expected or an incorrectly specified driver.

There is no need to go higher than +0dB ARMS.

## Adjustment to drive current/level required based on the measured field strength:

Measured Field Strength	Output current that will achieve 0dB
6.00dB	1.00A
5.00dB	1.12A
4.00dB	1.26A
3.00dB	1.42A
2.00dB	1.59A
1.00dB	1.78A
.00dB	2.00A
-1.00dB	2.24A
-2.00dB	2.52A
-3.00dB	2.83A
-4.00dB	3.17A
-5.00dB	3.56A
-6.00dB	3.99A
-7.00dB	4.48A
-8.00dB	5.02A
-9.00dB	5.64A
-10.00dB	6.32A
-11.00dB	7.10A
-12.00dB	7.96A
-13.00dB	8.93A
-14.00dB	10.02A
-15.00dB	11.25A

# Troubleshooting

Symptom	Possible Fault	Action
The driver does not turn on.	1) Mains power is absent. 2) Internal failure.	1) Check mains power. 2) Seek assistance.
Interference (buzzing/whistling/hissing) is heard through induction loop.	1) Bad input signals. 2) Internal failure.	1) Power off the hearing loop driver and confirm that interference isn't from external origin. 2) Disconnect input signals. If sound disappears, check inputs.
The driver is excessively hot to touch.	1) Large amount of mains hum present on input. 2) Internal failure.	1) Check input signal source. 2) Incorrect hearing loop driver being used.
The loop output level indicates current is flowing but I hear nothing in the loop.	1) Shorted feeder cable. 2) Loop listener is not working or being used too far from loop.	1) Check feeder cable, although the hearing loop driver will usually refuse to tune to shorted feeder. 2) Check listener and location.
The sound is distorted.	1) Input level has been turned up too high for signal level at input. 2) Input signal is distorted. 3) Output signal is clipping.	1) Reduce input level setting. 2) Check signal source. 3) Refer to "The Clipping Status Lights are lit" below.
The Clipping Status Lights are lit.	The connected hearing loop is too long.	1) Reduce the length of the loop. 2) Use a larger diameter cable. 3) Create a two-turn loop and reduce the current output. 4) Use a higher voltage driver.

Please contact your distributor (or Contacta if appropriate) if you are experiencing technical difficulties with the product.

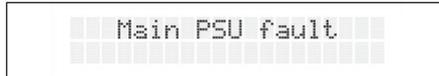
# Warning / Error Messages

When power is applied, the hearing loop driver will automatically perform an analysis of the loop connected to the output.

The following messages indicate an error has been detected:

## **Main PSU Fault**

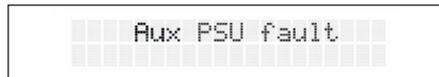
This message indicates an error with the main internal power supply.



The mains power should be recycled or a reboot initiated. If the warning still appears, disconnect the power supply and contact your distributor (or Contacta if appropriate).

## **Aux PSU Fault**

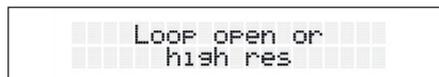
This message indicates an error with the auxillary power supply.



The mains power should be recycled or a reboot initiated. If the warning still appears, disconnect the power supply and contact your distributor (or Contacta if appropriate).

## **Loop Open or High Res**

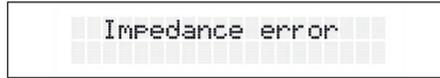
This message indicates that the loop connected is either open circuit (not connected) or is very high resistance.



The power should be removed, and loop and feeder cables should be checked with an ohmmeter to confirm continuity (too long/small gauge).

## Impedance Error

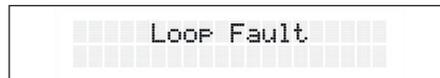
This message indicates that the loop connected has characteristics that are not expected with typical loops.



The mains power should be removed or the unit rebooted. Then, check the loop and feeder cables. Contact your distributor (or Contacta if appropriate) if the error persists.

## Loop Fault

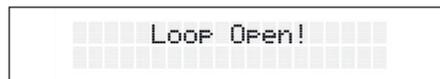
This indicates the driver has detected a general fault with the output.



This message can be displayed during start up or during operation. Contact your distributor (or Contacta if appropriate) if the error persists.

## Loop Open

During normal operation, this message indicates that the loop is open circuit; the Open Circuit Loop led on the front panel will also be lit



The mains power should be removed; then, check the loop and feeder cables. Contact your distributor (or Contacta if appropriate) if the error persists.

# Technical Specification

## Power

Voltage: 100V-120V /200V-240V AC (Universal auto switching)

Frequency: 50Hz-60Hz

Power: 175W

Connection: IEC

## Inputs

1 X Input A 3.5mm Euro-block [optimised for -10dBV to 0dBv]

1 X 100V Line Input (Transformer isolated) 3.5mm Euro-block

1 X Line Input (Transformer isolated) 3.5mm Euro-block

1 X Input B Line/Microphone (12V phantom power via 680Ω) [optimised for levels above -45dBv to -10dBv] 3.5mm Euro-block

## Output Characteristics

Output Voltage: 22Vrms (62.04Vpk-pk) @ 12Arms (33.84Apk-pk) see notes 1 and 2

Output Current: 12Arms (33.84Apk-pk) up to 300 seconds

Loop Connector: 4 Way 5.08mm Euro block

## Audio system

Frequency Response: 80Hz to 6.5kHz

Distortion: THD+N <1% (-40dB)

AGC: Switchable (Peak detecting)

HF Comp: 7 optimised stages

Acoustic Time Delay 10ms to 70ms adjustable in 1ms steps

Low cut filter Selectable 150Hz or 180Hz

## Display & Control

Display: LED Backlit LCD display

Control: Single rotary control

## Fault Monitoring and Protection

Main Display: Open circuit loop (DCR measurement)

Loop ground fault

Front Panel LED: Output voltage clipping

Cooling: Internal heatsinks with thermal protection

## Physical

Height: 42mm (1.65")

Depth: 149.9mm (5.9")

Width: 432.9mm (17.04")

Weight: 938g

Note 1:  $Z=1.83\Omega$  (162uH +0.838Ω @ 1.6kHz), Note 2: < 1% (-40dB) distortion









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