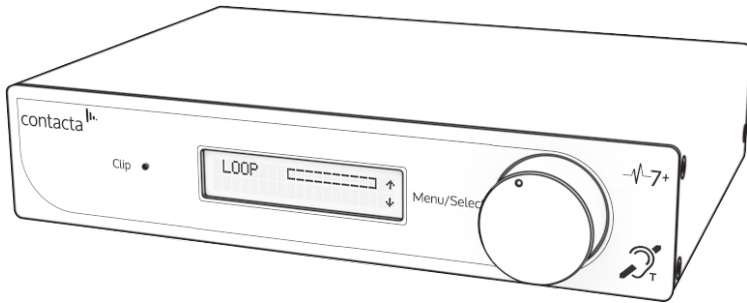


contacta 

 series
V7+ / V15+ / V15a+
Hearing Loop Drivers



Installation & User Guide

November 2023

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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 and compact V7+, V15+ and V15a+ hearing loop drivers are suitable for smaller facilities and venues.

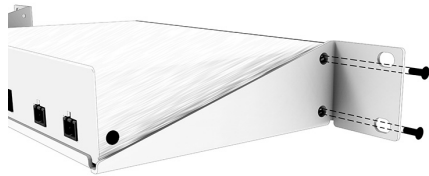
The V7+ and V15+ are constant current hearing loop drivers which power hearing loops utilising a single output. The V15a+ is a constant current dual output hearing loop driver with integral phase shifter for phased array configuration.

These hearing loop drivers offer features that are usually found in more expensive hearing loop drivers.

Features such as selectable High-Pass filters, audio signal delay and switchable AGC are now available in these entry level drivers. These features are enabled through the use of an advanced audio subsystem based on DSP.

Coupled with efficient Class D output stages allows the V+ range of drivers to achieve life-like speech and first-class music reproduction.

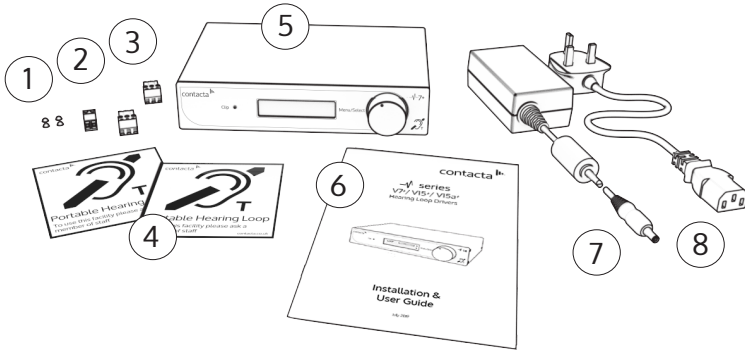
**CAUTION:
USE CORRECT PZ1
SCREWDRIVER
WHEN REMOVING
EXTERNAL SCREWS**



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

Components

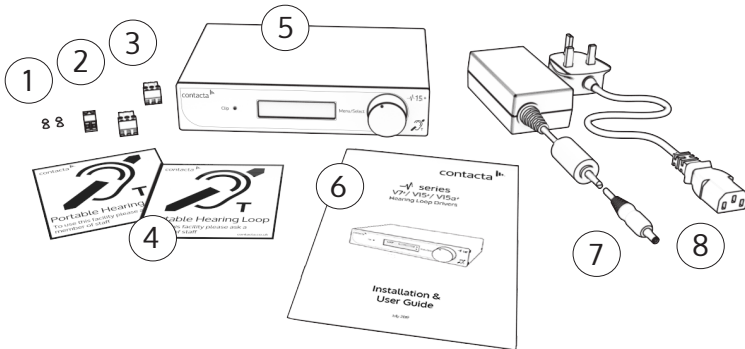
V7+



1. Rubber Feet x4
2. 5.08mm Euro-Block Connector
3. 3.81mm Euro-Block Connector x2
4. Signage

5. V7 Hearing Loop Driver
6. Installation & User Guide
7. Power Supply [PS-55]
8. IEC Power Lead*

V15+

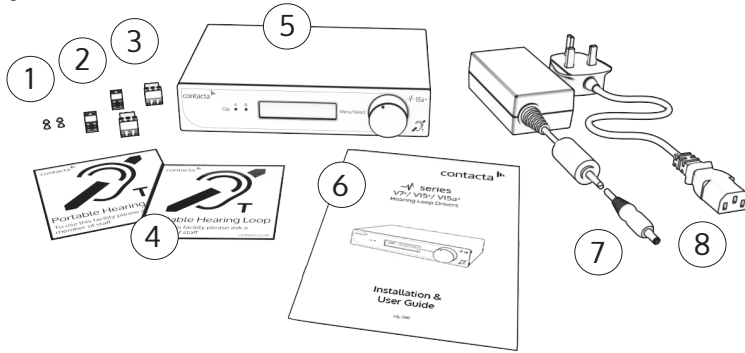


1. Rubber Feet x4
2. 5.08mm Euro-Block Connector
3. 3.81mm Euro-Block Connector x2
4. Signage

5. V15 Hearing Loop Driver
6. Installation & User Guide
7. Power Supply [PS-60]
8. IEC Power Lead*

*Plug type varies by country.

V15a+



1. Rubber Feet x4
2. 5.08mm Euro-Block Connector x2
3. 3.81mm Euro-Block Connector x2
4. Signage

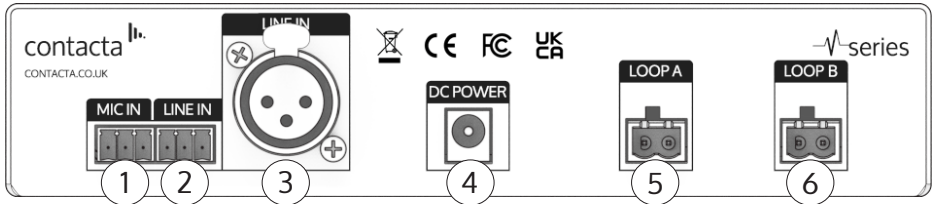
5. V15a Hearing Loop Driver
6. Installation & User Guide
7. Power Supply [PS-60]
8. IEC Power Lead*

*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

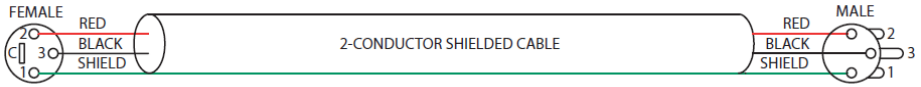
Rear Panel Connections



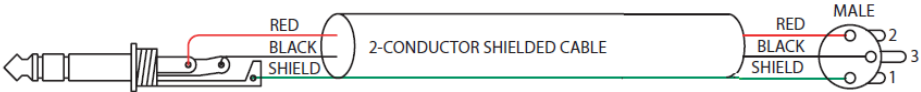
1. **Microphone Input** - 3.81mm Euro-block balanced microphone input (12V phantom power via 680 Ω).
 2. **Line Input 1*** - 3.81mm Euro-block balanced line input/feedthrough.
 3. **Line Input 2*** - XLR balanced line input/feedthrough.
 4. **Power Supply Input** - ***V7+** DC Power Input, 2.1mm 14Vdc 2.14A
*****V15+** DC Power Input, 2.1mm 24Vdc 4.17A
****V15a+** DC Power Input, 2.1mm 24Vdc 4.17A
⚠ Caution: Use only the provided Power Supply.
 5. **Loop A Output** - 5.08mm Euro-block.
 6. **Loop B Output** - 5.08mm Euro-block [V15a+ only].
- ***Note:** Only connect to one Line Input at a time.

Connection Examples

XLR to XLR (line)



TRS to XLR (line)



Unbalanced to XLR



XLR to Euroblock (balanced)



Unbalanced to Euroblock



Suitable Cable Lengths

The tables in this section show the approximate maximum cable lengths for differing maximum required currents.

Loop impedance (at 1.6kHz) should be less than the voltage capability of the driver (**V7+**: 7.5Vrms, **V15+**: 15Vrms, **V15a+**: 15Vrms) divided by the required current.

This achieves 400mA/m field strength at 1kHz.

V7+ Single-Turn Hearing Loop (Metric)

		Current	2.0A	3.0A	4.0A	5.0A
Cable Type		Cable Length				
Maximum Cable Length	Round Cable (CSA)	0.5mm	85m	56m	42m	34m
		1mm	133m	89m	66m	53m
		1.5mm	155m	103m	77m	62m
		2.5mm	173m	115m	86m	69m
	Flat Cable (Width)	10mm	101m	67m	50m	40m
		12.5mm	192m	128m	96m	77m
25mm		255m	170m	127m	102m	

V7+ Single-Turn Hearing Loop (Imperial)

		Current	2.0A	3.0A	4.0A	5.0A
Cable Type		Cable Length				
Maximum Cable Length	Round Cable (AWG)	18AWG	438ft	292ft	219ft	175ft
		14AWG	593ft	395ft	296ft	237ft
	Flat Cable (Width)	18AWG (equivalent)	505ft	336ft	252ft	202ft
		14AWG (equivalent)	711ft	474ft	355ft	284ft

V15+ Single-Turn Hearing Loop (Metric)

Current	2.0A	3.0A	4.0A	5.0A
---------	------	------	------	------

Cable Type			Cable Length			
Maximum Cable Length	Round Cable (CSA)	1mm	242m	161m	121m	97m
		1.5mm	284m	189m	142m	114m
		2.5mm	319m	213m	160m	128m
	Flat Cable (Width)	10mm	180m	120m	90m	72m
		12.5mm	340m	226m	170m	136m
		25mm	450m	300m	225m	180m

V15+ Single-Turn Hearing Loop (Imperial)

Current	2.0A	3.0A	4.0A	5.0A
---------	------	------	------	------

Cable Type			Cable Length			
Maximum Cable Length	Round Cable (AWG)	18AWG	746ft	498ft	373ft	299ft
		14AWG	997ft	664ft	498ft	399ft
	Flat Cable (Width)	18AWG (equivalent)	840ft	560ft	420ft	336ft
		14AWG (equivalent)	1327ft	885ft	663ft	531ft

V15a+ Single-Turn Hearing Loop (Metric)

Current	2.0A	3.0A	4.0A	5.0A
---------	------	------	------	------

Cable Type			Cable Length			
Maximum Cable Length	Round Cable (CSA)	1mm	266m	177m	133m	106m
		1.5mm	311m	208m	156m	125m
		2.5mm	350m	233m	175m	140m
	Flat Cable (Width)	10mm	197m	131m	99m	79m
		12.5mm	373m	249m	186m	149m
		25mm	493m	329m	247m	197m

V15a+ Double-Turn Hearing Loop (Metric)

Current	2.0A	3.0A	4.0A	5.0A
---------	------	------	------	------

Cable Type			Cable Length			
Maximum Cable Length	Round Cable (CSA)	1mm	193m	129m	97m	77m
		1.5mm	209m	139m	104m	83m
		2.5mm	219m	146m	110m	88m
	Flat Cable (Width)	10mm	172m	115m	86m	69m
		12.5mm	267m	178m	133m	107m
		25mm	316m	211m	158m	126m

V15a+ Single-Turn Hearing Loop (Imperial)

Current	2.0A	3.0A	4.0A	5.0A
---------	------	------	------	------

Cable Type			Cable Length			
Maximum Cable Length	Round Cable (AWG)	18AWG	819ft	546ft	409ft	328ft
		14AWG	1093ft	729ft	547ft	437ft
	Flat Cable (Width)	18AWG (equivalent)	921ft	614ft	461ft	369ft
		14AWG (equivalent)	1456ft	971ft	728ft	582ft

V15a+ Double-Turn Hearing Loop (Imperial)

Current	2.0A	3.0A	4.0A	5.0A
---------	------	------	------	------

Cable Type			Cable Length			
Maximum Cable Length	Round Cable (AWG)	18AWG	598ft	399ft	299ft	239ft
		14AWG	684ft	456ft	342ft	273ft
	Flat Cable (Width)	18AWG (equivalent)	723ft	482ft	362ft	289ft
		14AWG (equivalent)	949ft	633ft	475ft	380ft

Driver Area Coverage

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

Perimeter Loops

Perimeter loop areas detailed in the table on page 13 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)

Phased Array Loops

Phased array loop areas detailed in the table on page 13 are valid only when the following conditions are met:

1. Area is at the maximum voltage the driver is capable of delivering without voltage clipping at 1.6KHz
2. Layout of 3m segment widths
3. 25mm X 0.1mm flat copper cable is used
4. Loop is installed in the floor
5. Listening height 1.2m
6. Medium metal loss = 6dB

			Area			
Voltage	Current		1:1	1:2	1:3	
Perimeter loops						
V7+	7.5V	5.0A		95.06m ²	143.00m ²	178.64m ²
V15+	15.0V	5.0A		95.06m ²	143.00m ²	178.64m ²
Phased array (no metal loss)						
V15a+	15.0V	5.0A		625.00m ²	684.50m ²	705.33m ²
Phased array (medium metal loss)						
V15a+	15.0V	5.0A		289.00m ²	288.00m ²	408.33m ²

Start-Up Tests

V+ Series drivers perform a series of tests when powered on, causing a number of indications to appear on the display screen during start-up.

Indicator	Meaning	Remedy
V7+ and V15+: Loop Good V15a+: Loop A Good Loop B Good	Hearing loop(s) is/are correctly connected to the driver.	None required.
V7+ and V15+: Loop Open Fault V15a+: Loop A Open Fault Loop B Open Fault	Hearing loop(s) is/are improperly connected to the driver. An open-circuit loop will not damage the driver, and start-up will continue to the main menu.	Ensure that the loop(s) is properly connected to the driver. The loop current indication in normal operation may be used to confirm the connections.
V7+ and V15+: Loop Ground Fault V15a+: Loop A Ground Fault Loop B Ground Fault	A ground fault with the hearing loop(s) has been found. The driver will halt operation with this message displayed on screen, as such a fault would cause stress to the driver were normal operation to continue.	Switch off the driver and carefully check the loop(s) for shorts to ground. Rectify the faults and re-apply power to the driver. Please contact your distributor (or Contacta if appropriate) if technical difficulties persist.
Incorrect Power	The power input supply voltage from the mains power supply is incorrect. The driver will halt operation with this message displayed on screen, as such a fault would cause stress to the driver were it to continue to normal operation.	Switch off the driver and connect the power supply which was provided with the driver. If this is not available, contact your distributor to order a new power supply.

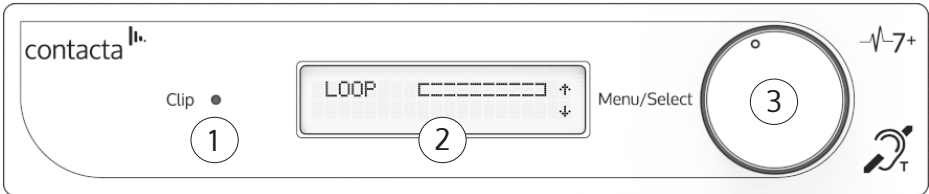
Please note if using V15a+: If connecting only one loop to a V15a+, whichever loop connection has not been used (either Loop A or Loop B) will show as an "Open Fault" as default. This is the correct display for operation with only one loop; continue as normal.

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

Controls

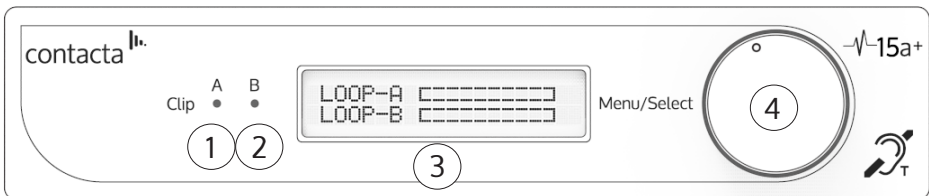
Front Panel Overview

V7+ and V15+



1. **Clip Status Light** - When lit, this status LED indicates the signal on the hearing loop output is clipping (see Troubleshooting on page 30 for appropriate solutions).
2. **Display Screen** - Indicates the status of the Loop Output, displays menu and adjustment options.
3. **Control Dial** - Used for unlocking and making adjustments.

V15a+



1. **Clip Status Light** - When lit, this status LED indicates the signal on Hearing Loop A is clipping (see Troubleshooting on page 30 for appropriate solutions).
2. **Clip Status Light** - When lit, this status LED indicates the signal on Hearing Loop B is clipping (see Troubleshooting on page 30 for appropriate solutions).
3. **Display Screen** - Indicates the status of the Loop Output, displays menu and adjustment options.
4. **Control Dial** - Used for unlocking and making adjustments.

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 hearing loop driver to the lock screen.

Additional Functions and Codes

1. To access one of the additional functions available, press the control dial, and when prompted "Unlock driver?" click "Yes."
2. Enter one of the following passcodes:
 - **1010**: Disable the display backlight 10 minute auto switch-off. This setting is remembered through power cycles.
 - **1011**: Enable the display backlight 10 minute auto switch-off. This setting is remembered through power cycles.
 - **9999**: Disable the auto re-lock (timeout). This is not remembered through power cycles.
 - **8888**: Restore all factory defaults and restart the driver.

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:

V7+ and V15+

1. Loop Output
2. AGC On/Off
3. Line Input
4. Phantom Power
5. Microphone Input
6. Current Output (no adjustment)
7. High-Frequency Compensation
8. Input High Pass Filter
9. Audio Delay

V15a+

1. Loop Output
2. Line Input
3. Phantom Power
4. Microphone Input
5. Loop B Trim Adjustment
6. High-Frequency Compensation
7. High Pass Filter
8. Audio Delay
9. AGC On/Off

Adjustment Mode

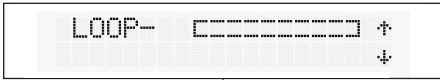
Press the control dial in to enter Adjustment Mode; the arrows on the display screen will move to a left and right position.

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.

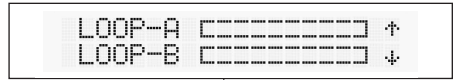


If the control dial is not used for 120 seconds when in Adjustment Mode the hearing loop driver will revert to the main menu, with Loop Output as the default screen.

Loop Output



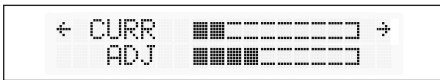
V7+ and V15+ Loop Output



V15a+ Loop Output

The hearing loop driver's Loop Output section displays the real-time output current in 0.5A steps.

Adjustments



V7+ and V15+ Loop Output: Adjustment Mode



V15a+ Loop Output: Adjustment Mode

In Adjustment Mode, the real-time output current is displayed on the top line in 0.5A 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.



- To switch the AGC off, rotate the control dial clockwise.
- To switch the AGC on, rotate the control dial anti-clockwise.
- Press the control dial once to confirm the selection and return to the main menu.

Adjustments



Line Input



The hearing loop driver's Line Input section displays the line input level within 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 line level is at an optimum level for the automatic gain control to operate.
- "High" indicates the line level is too high and signal clipping may occur. Signal clipping will also be shown by the LED.

Adjustments



It is recommended that at least 5 blocks in the adjustment block are filled (see the above image for an example).

Enter Adjustment Mode, and alter the line input level displayed on the bar until the text displays 'Good':

- To increase the line input level, rotate the control dial clockwise.
- To decrease the line 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



Phantom power for a connected microphone is set off as the default setting.

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 and return to the main menu.

Microphone Input



The hearing loop driver's Microphone Input section displays the microphone input level within a range of 47dB.

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

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

Adjustments



It is recommended that at least 5 blocks in the adjustment block are filled (see the above image for an example).

Enter Adjustment Mode and alter the microphone input level displayed on the bar until the text displays 'Good':

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

Audio 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



After 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.

V15a+ Only: Loop Trim

```
Loop Trim    ↑  
A=2.0Arms  B=1.5Arms↓
```

When using a V15a+, the hearing loop driver’s Loop Trim function allows Loop B’s output to be adjusted relative to Loop A’s output.

Please note: This section is only available on the **V15a+**. The equivalent V7+ and V15+ menu displays Current Output, to which adjustments can be made using the Loop Output section (see page 18).

When in the Loop Trim section, adjustments are made in 1dB steps. The measured loop output current is displayed in amps RMS (accurate for sine signals).

Adjustments

```
← Loop B Trim →  
A=2.0Arms  B=2.0Arms
```

Enter Adjustment Mode to alter “Loop B Trim” relative to “Loop A”.

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

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.

To calculate the correct high-frequency compensation level, refer to Setup on page 24.

Hearing Loop Setup

To ensure optimal performance of a V7+, V15+ or V15a+ hearing loop driver, setup should be performed in following order:

Step 1: Background Noise Level (see page 28)

Step 2: Metal Loss (see pages 28-29)

Step 3: Output Level and Clipping (see page 29-30)

Step 4: Field Uniformity (see page 30-31)

Step 5: Final Output Level Adjustment (see page 31)

Step 6: Input Signal Level Adjustment (see page 31)

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 must 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 29).

Note: If more than 7.9dB 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 Loop A and Loop B Clip LEDs remain unlit.
10. If the driver's front panel Clip LEDs remain 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 LEDs are 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 higher diameter of flat 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 user 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 27. 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 2.5 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	Steps to increase Drive	Steps to decrease Drive
6.00dB	1.00A		6
5.00dB	1.12A		5
4.00dB	1.26A		4
3.00dB	1.42A		3
2.00dB	1.59A		2
1.00dB	1.78A		1
.00dB	2.00A	0	0
-1.00dB	2.24A	1	
-2.00dB	2.52A	2	
-3.00dB	2.83A	3	
-4.00dB	3.17A	4	
-5.00dB	3.56A	5	
-6.00dB	3.99A	6	
-7.00dB	4.48A	7	
-8.00dB	5.02A	8	
-9.00dB	5.64A	9	
-10.00dB	6.32A	10	
-11.00dB	7.10A	11	
-12.00dB	7.96A	12	
-13.00dB	8.93A	13	
-14.00dB	10.02A	14	

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. 4) Use a higher voltage driver.

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

Troubleshooting

Loop Ground Fault



This image indicates the driver has detected a fault with the loop.

Diagnosing the fault

Step 1:

Recycle the mains power. If the error message is displayed again move onto step 2.

Step 2:

Remove the power and disconnect the loop(s).

Using a multi-meter measure the resistance of the loop.

This measurement should be made at the Euroblock connector between the conductors.

The reading should be below the following values:

V15a+ <12 Ω	V15+ <12 Ω	V7+ <6 Ω
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If the loop resistance is higher than these values but not an open circuit, then:

A) The loop connected (including feeder cable) exceeds the maximum Resistance due to being either too long or too small a gauge or a combination of both.

The reason should be investigated.

B) If the reading is open circuit, then there us most likely a break in the loop or feeder cable.

The cause should be investigated.

If the loop resistance is within these values (typically less than half these values) then the fault could be caused by the loop being connected to mains or building ground (Earth).

Step 3:

With the mains power removed, disconnect the loop connector.

Using a multi-meter measure the resistance of the loop connections and a suitable ground/earth connection, such as the chassis of an earthed piece of electrical equipment, exposed metal pipes (water or gas) or conduit.

This should be measured using a multi-meter on the Megaohms ($M\Omega$) range.

The reading should be greater than $10M\Omega$, be careful not to touch any of the meter connections as this will affect the measurement.

If the reading is higher than $10M\Omega$ or the meter reads O/C (open circuit) on the V15a+ move on to step 4. For V15+ and V7+ contact your supplier or installer for advice.

If the reading is lower than $10M\Omega$ then the loop insulation needs checking.

Very low readings may indicate a serious fault with the loop insulation. This should be rectified before proceeding.

Step 4:

Using a multi-meter on the Megaohms ($M\Omega$) range, measure the resistance between both loops. The reading should be greater than $10M\Omega$ be careful not to touch any of the meter connections as this will affect the measurement.

If the reading is lower than this check the loop/feeder cable insulation and points where the loops are in physical contact with each other.

If the reading is higher than $10M\Omega$ or the meter reads O/C (open circuit), contact your supplier or installer for advice.

Technical Specification

V7+:

Power

2.1mm 30W 14Vdc 2.14A via External PSU (PS-55)
Class 6 External PSU (100V -240V AC 50Hz-60Hz)

Inputs

1 X Line XLR or 3.81mm Euro-block [optimised for -10dBV to 0dBV]
1 X Microphone (12V phantom power via 680Ω) [optimised for levels above -45dBV]

Output Characteristics

Output Voltage: 7.5Vrms (21.21Vpk-pk) @ 5Arms (14.14Apk-pk) *see notes 1 and 2*
Output Current: 5Arms (14.14Apk-pk) up to 300 seconds
Loop Connector: 5.08mm Euro-block

Audio system

Frequency Response: 80Hz to 6.5kHz
Distortion: THD+N <1% (-40dB)
AGC: Peak detecting
HF Comp: 7 optimised stages
Audio Delay: 1ms - 70ms in 1ms steps
High Pass Filter: Off/150Hz/180Hz

Note 1: Z=1.4Ω (133uH +0.685Ω @ 1.6kHz) **Note 2:** < 1% (-40dB) distortion

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: 132mm (5.20") [150mm (5.90") including XLR and control knob]
Width: 198mm (7.80")
Weight: 938g (2.06lbs)

Technical Specification

V15+:

Power

2.1mm 100W 24Vdc 4.17A via External PSU (PS-60)
Class 6 External PSU (100V -240V AC 50Hz-60Hz)

Inputs

1 X Line XLR or 3.81mm Euro-block [optimised for -10dBV to 0dBv]
1 X Microphone (12V phantom power via 680Ω) [optimised for levels above -45dBv]

Output Characteristics

Output Voltage: 15Vrms (42.3Vpk-pk) @ 5Arms (14.14Apk-pk) *see notes 1 and 2*
Output Current: 5Arms (14.14Apk-pk) up to 300 seconds
Loop Connector: 5.08mm Euro-block

Audio system

Frequency Response: 80Hz to 6.5kHz
Distortion: THD+N <1% (-40dB)
AGC: Peak detecting
HF Comp: 7 optimised stages
Audio Delay: 1ms - 70ms in 1ms steps
High Pass Filter: Off/150Hz/180Hz

Note 1: $Z=3\Omega$ (265.4uH + 1.37Ω @ 1.6KHz), **Note 2:** 1% (-40dB) distortion

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: 132mm (5.20") [150mm (5.90") including XLR and control knob]
Width: 198mm (7.80")
Weight: 938g (2.06lbs)

Technical Specification

V15a+:

Power

2.1mm 100W 24Vdc 4.17A via External PSU (PS-60)
Class 6 External PSU (100V -240V AC 50Hz-60Hz)

Inputs

1 X Line XLR or 3.81mm Euro-block [optimised for -10dBV to 0dBv]
1 X Microphone (12V phantom power via 680Ω) [optimised for levels above -45dBv]

Output Characteristics

Output Voltage: 15Vrms (42.3Vpk-pk) @ 5Arms (14.14Apk-pk) *see notes 1 and 2*
Output Current: 5Arms (14.14Apk-pk) up to 300 seconds
Loop Connector: 5.08mm Euro-block

Audio system

Frequency Response: 80Hz to 6.5kHz
Distortion: THD+N <0.3% (-50.5dB) Full current both outputs driven
AGC: Peak detecting
HF Comp: 7 optimised stages
Audio Delay: 1ms - 70ms in 1ms steps
High Pass Filter: Off/150Hz/180Hz

Note 1: $Z=3\Omega$ (265.4uH + 1.37Ω @ 1.6KHz), **Note 2:** 1% (-40dB) distortion

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: 132mm (5.20") [150mm (5.90") including XLR and control knob]
Width: 198mm (7.80")
Weight: 978g (2.15lbs)

Standards

EMC

- BS EN 55103-1: 2009 (EMC emissions)
- BS EN 55103-2: 2009 (EMC immunity)

This product has been designed and tested to comply with the following North American and Canadian standards:

- FCC class "B" EMC (emissions)
- ICES-003



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.

CAUTION: Changes or modifications not expressly approved by Contacta Systems LTD or an authorised partner could void the user's authority to operate the equipment.

Correct disposal of this product



This marking indicates that this product should not be disposed with other household waste throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal and to conserve material resources, this product should be recycled responsibly. To dispose of your product, please use your local return and collection systems or contact the retailer where the product was purchased.



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