Contacta VLD1 Vehicle Hearing Loop Driver Instructions

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Contacts 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.

Contents

Product Overview

The Contacts VLD1 is a compact two output Audio Frequency Hearing Loop Driver for use on passenger vehicles.

It is designed to improve communication with all passengers through improved speech intelligibility and signal to noise ratio.

The driver uses advanced class D amplifiers and integrated switching power supply offering maximum efficiency. The power supply is capable operating from a vehicle power supply of 24V.

The audio subsystem is built around an advanced DSP core, this combined with microprocessor control ensures optimal performance.

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

Safety Instructions

1. Read and keep these instructions.
2. Heed all warnings.
3. Follow all instructions.
4. Do not use this apparatus near water.
5. Clean only with dry cloth.
6. Install in accordance with the manufacturer’s instructions.
7. Do not install near any heat source.
8. Follow information for polarized connections.
9. Protect the power connections from being damaged/pinched.
10. Only use attachments/accessories specified by the manufacturer.
11. Refer to all qualified service personnel. Servicing is required when the apparatus has been damaged in any

way, such as, liquid has been spilled or, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

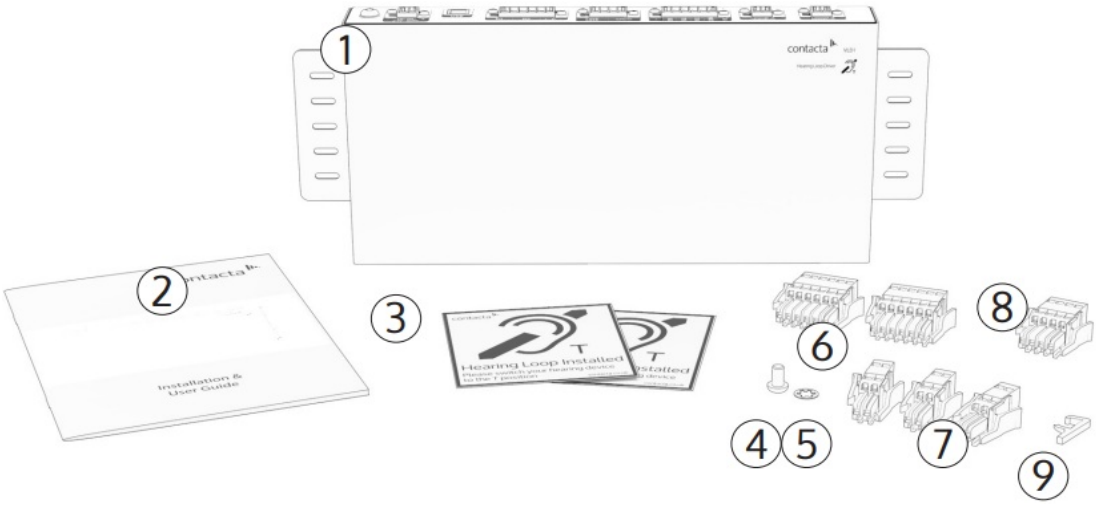
Power Sources – This product should be operated only from the type of power source indicated on the marking label.

Damage Requiring Service – The equipment should be serviced by qualified service personnel when:
a. Liquid has spilled into the equipment, or
b. The equipment has been exposed to rain, or
c. The equipment does not appear to operate normally or exhibits a marked change in performance, or
d. The equipment has been dropped or the enclosure damaged CAUTION REGARDING PLACEMENT: To maintain proper ventilation, be sure to leave a space around the unit (from the largest outer dimensions including projections) that is equal to or greater than these measurements:

Left and Right Panels (from edge of brackets): 0.5cm
Rear Panel (with connectors): 10cm
Top Panel: 1.46cm

Brackets for affixing this unit are pre-attached to the driver – these should be used to secure the driver in the desired location. Fixings are not provided for securing the driver in its end location.

Components



1. VELD 1 Audio Frequency Induction Loop Amplifiers (brackets pre-fixed)
2. User Manual
3. 2x IL-SN01 Label
4. M6 Bolt
5. M6 Serrated Washer
6. 2x 6 Pin Connectors
7. 3x 2 Pin Connectors
8. 4 Pin Connector
9. Connector Tool

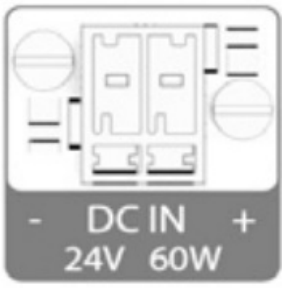
Related Document: VLD1 Software User Guide, available in the Resources section of the Contacts Systems Ltd website: **www.contacta.co.uk/resources**

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.

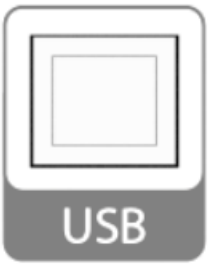
Connections

1. Earthing Point

2. DC Power Input

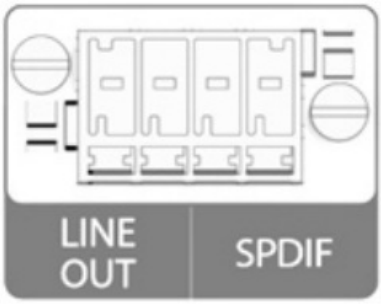


3. USB Input

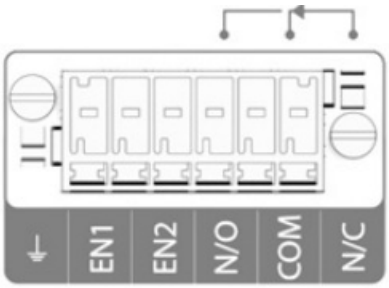


4. Audio Inputs – B1, B2, A

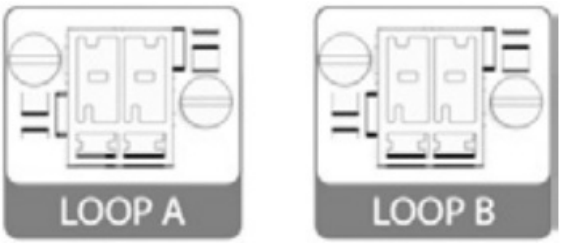
5. Line Out and SPDIF Input



6. Enables and Status



7. Loop Outputs



Earthing Point

A location is provided for earthing the product to the vehicle; this is not a safety earth, but is required for EMC performance. An M6 bolt and serrated washer are included within the kit for this purpose.

DC Power Input

The driver is designed to operate on nominal supplies of 24V, but will operate over the range 9.5V to 35.5V.

The DC input has the following protections:
A) Reverse polarity protection – the unit will not power up under this condition.
B) Transient voltage – protected to +/-40% (7.6V – 49.5V)
C) Under voltage protection – the unit will not power up under this condition and will automatically recover when input reaches an in-range voltage.

Input Voltage Nominal	24V
Min/Max	(9V to 36V)
Current Typical	0.5A
Max @ 24V	3A
Connector Type	Wago 769
Mating half P/N	769-102_021-000
Cable Type	1.5mm CSA to 4mm CSA

USB Input

This allows connection to a PC in order to access the setup GUI. Refer to the “Software and Setup Guide” for more information.

Connector Type	USB Type B

Audio Inputs – B1, B2, A

All adjustments for the audio inputs are made via the Contacts VLD1 GUI, accessed by connecting a PC to the USB connection.

Input B1
This input is transformer isolated. It is designed to be used as a line level input. Adjustments are made from the GUI.

Input B2
This input is transformer isolated and is designed to accept voltages from 1Vrms up to 100Vrms (line audio). This allows direct connection to speaker systems. Input adjustments are made from the GUI.

Input A
This input is not electrically isolated and is designed to be used primarily as a microphone input – it can also accept line level inputs.
To use it as a microphone input, a 5V phantom power is available; this is delectable from the GUI

	Pin No	Pin Description
B1	6	High Level Audio in (Hot)
	5	High Level Audio in (Cold)
B2	4	Line Level Audio in (Cold)
	3	Line Level Audio in (Hot)
A	2	Line/Mic in (Hot)
	1	Line/Mic in (GND)

	Voltage		Current		Frequency	Notes
	Nominal	Max/Min	Max	Typical		
B1	–	100Vrms-1Vrms	3mA	<1mA	100Hz -5000Hz	Transformer Isolated
B2	1Vrms (0dBV)	2Vrms-0.01Vrms	2mArms	0.5mArms	100Hz -5000Hz	Transformer Isolated
A	1Vrms (0dBV)	2Vrms-0.01Vrms	2mArms	0.5mArms	100Hz -5000Hz	Phantom Power (5V)

	Connector Type	Mating half P/N	Cable Type
B1	Wago 769	769-106_021-000	Twisted Pair1 twist/ Inch (25.4mm)
B2	Wago 769	769-106_021-000	Twisted Pair1 twist/ Inch (25.4mm)
A	Wago 769	769-106_021-000	Twisted Pair1 twist/ Inch (25.4mm)

Line Output and SPIFF Input

Line Output –

SPIFF – Sony/Philips Digital Interface
This interface is an optional feature which allows connection to equipment with an electrical digital audio output and offers greater noise immunity. Input adjustments are made from the GUI.

	Pin No	Pin Description
Line Out	4	Audio Line Out (Cold)
	3	Audio Line Out (Hot)
SPIFF	2	RX
	1	Digital Return

	Voltage		Current		Frequency	Notes
	Nominal	Max/Min	Max	Typical		
Line Out	1Vrms (0dBV)	2Vrms-0.01 Vrms	2mArms	0.5mArms	100Hz-5000 Hz	Feeds extra systems
SPDIF	0.5V – 0.6Vpk-pk	–	–	–	–	–

	Connector Type	Mating half P/N	Cable Type
Line Out	Wago 769	769-104_021-000	Twisted Pair1 twist/ Inch (25.4 mm)
SPDIF	Wago 769	769-104_021-000	Twisted Pair /Coax

Line Output and SPDIF Input

Line Output –
SPDIF – Sony/Philips Digital Interface
This interface is an optional feature which allows connection to equipment with an electrical digital audio output and offers greater noise immunity. Input adjustments are made from the GUI.

	Pin No	Pin Description
RTN	6	Enable Return
EN1	5	Enable 1
EN2	4	Enable 2
N/O	3	Status (Normally Open Relay Contact)
Common	2	Status (Common Relay Contact)
N/C	1	Status (Normally Closed Relay Contact)

		Voltage		Current		Notes
	Pin No	**Nominal**	**Max/Min**	**Max**	**Typical**	
RTN	6	–	0V	1.2mA	–	–
EN1	5	–	24V DC	1.2mA	–	Enable Input
EN2	4	–	24V DC	1.2mA	–	Enable Input
N/O	3	–	24VDC	5A	–	Volt-less Relay Contacts
Common	2	–	24VDC	5A	–	
N/C	1	–	24VDC	5A	–	

	Connector Type	**Mating half P/N**
RTN	Wago 769	769-106_021-000
EN1		
EN2		
N/O		
Common		
N/C		

Enables and Status

Status
The status output consists of a pair of relay contacts sharing a common pole.

One pair is normally open, and the other is normally closed. These can be connected to external circuits or systems.

Should the VLD1 detect a fault the relay will operate. This will open the normally closed contacts and close the normally open contacts.

For a detailed list of conditions that will cause the status relay to operate, see LED Indicators on page 13.

Enables EN1 and EN2
These inputs can be configured in the GUI to perform various operations such as muting inputs or enabling low power mode.
For details on how to configure the enable please refer to the “Transport Driver Software and Setup Guide”.

	Pin No	Pin Description
RTN	6	Enable Return
EN1	5	Enable 1
EN2	4	Enable 2
N/O	3	Status (Normally Open Relay Contact)
Common	2	Status (Common Relay Contact)
N/C	1	Status (Normally Closed Relay Contact)

		Voltage		Current		Notes
	Pin No	Nominal	Max/Min	Max	Typical	
RTN	6	–	0V	1.2mA	–	–
EN1	5	–	24V DC	1.2mA	–	Enable Input
EN2	4	–	24V DC	1.2mA	–	Enable Input
N/O	3	–	24VDC	5A	–	Volt-less Relay Contacts
Common	2	–	24VDC	5A	–	
N/C	1	–	24VDC	5A	–	

	Connector Type	Mating half P/N
RTN	Wago 769	769-106_021-000
EN1		
EN2		
N/O		
Common		
N/C		

Loop Output(s)

The loop outputs are configurable from the GUI and can be used in parallel, phased or separate.

Loop drive level is also adjustable from the GUI.

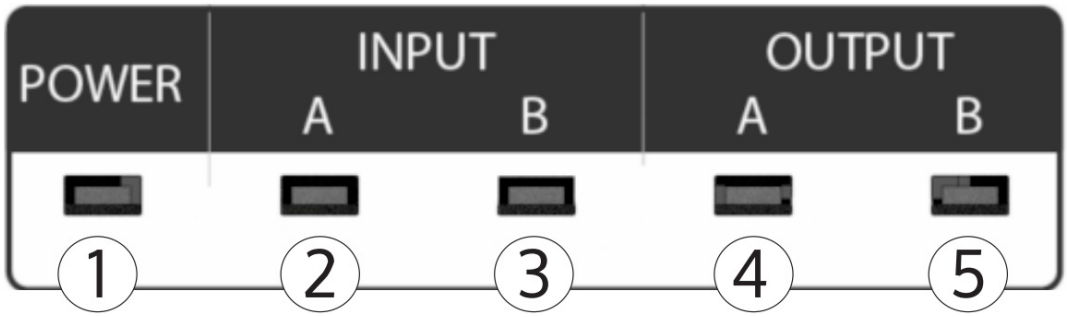
These outputs are bridged tied meaning that each pin is floating and must not be connected to ground.

	Pin No	Pin Description
Loop A & B	1	Loop –
	2	Loop +

	Voltage		Current			Notes
	Pin No	Nominal	Min/Max	Max	Typical	
Loop A & B	1	–	6Vrms	5Arms	1.25Arms	Floating O/P (Do not ground)
	2	–	6Vrms	5Arms	1.25Arms	Floating O/P (Do not ground)

	Connector Type	Mating Half P/N	Cable Type
Loop A & B	Wago 769	769-102_021-000	Twisted Pair (1.5mm CSA min) 1 twist / inch (25.4mm)

LED Indicators



1. **Power –** Illuminated when the power to the VLD1 is present and within the correct voltage range.
2. **Input A** – Illuminated when there is a signal present at input A. The pre-amp gain must be set correctly.
3. **Input B –** Illuminated when there is a signal present at input B. Thepre-amp gain must be set correctly.
4. **Output A** – Illuminated when output A is driving current into its loop load. Will not indicate if the loop is disconnected.
5. **Output B –** Illuminated when output A is driving current into its loop load. Will not indicate if the loop is disconnected.

Standards

- **2012/19-EU** – The Waste Electrical & Electronic Equipment Directive
- **2015/863/EU** – The Restriction of Hazardous Substances Directive
- **EMC:** EN/ECE R10 (EMC for vehicle components)

Specifications

Physical Data

Dimensions	Height – 143mm (5.62”)Width – 294mm (115.7”) [361mm (14.2”) inc. brackets] Depth – 41mm (16.1”)
Construction	Intent / Mixed
Finish	Powder Coated

Audio Inputs	1 x Line level Input (balanced and transformer isolated)	Voltage	-45dBV – 0dBV (optimised for -10dBV – 0dBV)
		Frequency Range	100Hz-6000Hz
		Topology	Balanced and transformer isolated
	1 x Line High Voltage Level Input (balanced and transformer Isolated)	Voltage	+5dBV – +45dBV (0.562Vrms -100Vrms)
		Frequency Range	100Hz-6000Hz
		Topology	Balanced and transformer isolated
	1 x Universal Line or Microphone Input (microphone bias: optimised for Contacts microphones)	Voltage	-45dBV – 0dBV (optimised for -10dBV – 0dBV)
		Frequency Range	100Hz-9kHz
		Topology	Electronically Balanced
		Microphone Bias	Optimised for Contacts microphones
	[Optional extra feature, not fitted on standard units]1 x Digital Audio Input	Connection	SPIFF
		Encoding	PCM 16 bit
		Sample Rate	44.1KHz, 48KHz, 96KHz
Outputs	2 x Independent Loop Outputs (delectable 0° and 90° phase shift)	Voltage	>12Vrms
		Current	>4Arms
		Electable 0° and 90° phase shift	
	1 x Line Level Output	The line outputs should have the following characteristics:	
		Format	Audio mix of all drivers
		Phase shift	0°
		Gain	0dB
System Connections	1 x Power Connection	Voltage	Nominal 24V (9V-24V)
		Current	Maximum 6.6Arms @ 9VDC
		Connector	WAGO 769 series detachable 2-wayblock
	1 x USB Connection [for factory configuration and system setup, adjustments and updates]	The input should have the following characteristics:	
		Connector	USB Type A
		Use	Firmware/Config/Update
	2 x Enable/Disable(Mute) Connections	The input should have the following characteristics	
		Trigger	Configurable (High-Low or Low-High)
		Threshold	Production Configurable (Resistor change)
	Connector Type	WAGO 769 series	

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 i nduction loop.	1. Bad input signals. 2. Internal failure.	1. 1) Power off the hearing loop dri ver and confirm that interference isn't from external origin. 2. Disconnect input signals. If soun d disappears, check inputs.
The driver is excessively hot to touch.	1. Large amount of mains hum pre sent on input. 2. Internal failure.	1. Check input signal source. 2. Incorrect hearing loop driver bei ng used.
The loop output level indicates curr ent is flowing but I hear nothing in t he loop.	1. Shorted feeder cable. 2. Loop listener is not working or b eing used too far from loop.	1. Check feeder cable, although th e 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 to o 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 Lig hts are lit" below.
The Clipping Status Lights are lit.	The connected hearing loop is too l ong.	1. Reduce the length of the loop. 2. Use a larger diameter cable. 3. Create a two-turn loop and redu ce the current output. 4. Use a higher voltage driver.

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

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Documents / Resources

	Contacta VLD1 Vehicle Hearing Loop Driver [pdf] Instructions VLD1 Vehicle Hearing Loop Driver, VLD1, Vehicle Hearing Loop Driver, Hearing Loop Driver, Loop Driver, Driver

References

- Innovative assistive technology solutions - Contacta
- Home - Assistive Hearing Technology & Solutions - Contacta Inc
- User Manual