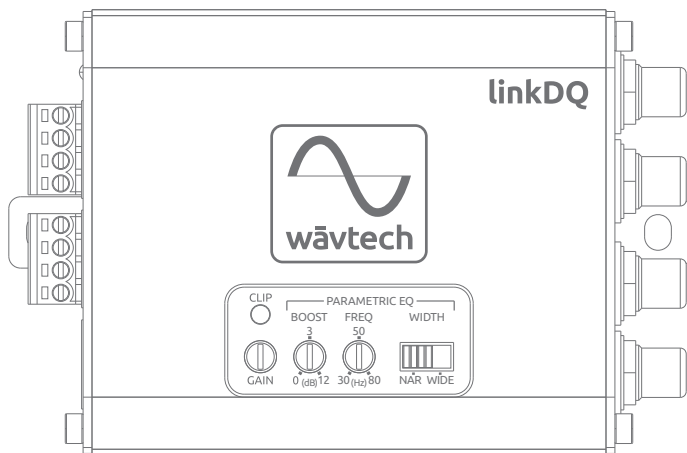


# linkDQ

2-Channel LOC / Line Driver

Parametric EQ • Auto Turn-On • RLC Ready

## Owner's Manual



[www.wavtech-usa.com](http://www.wavtech-usa.com)

<b>WARNING</b>	This symbol means important instructions. Failure to heed them can result in serious injury or death.
<b>CAUTION</b>	This symbol means important instructions. Failure to heed them can result in injury or property damages.

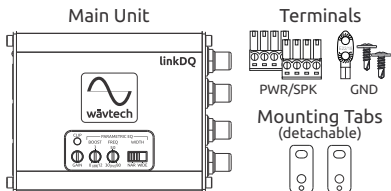
## **WARNING**

- **DO NOT DRIVE WHILE DISTRACTED.** Any function that requires your prolonged attention should not be performed while driving. Always stop the vehicle in a safe location before performing any such function. Failure to do so may result in an accident.
- **KEEP THE VOLUME AT MODERATE LEVELS WHILE DRIVING.** Excess volume levels can obscure sounds such as emergency vehicle sirens or road warning signals and may result in an accident. Continuous exposure to high sound pressure levels may cause permanent hearing loss. Use common sense and practice safe sound.
- **FOR USE WITH 12V NEGATIVE GROUND VEHICLE APPLICATIONS ONLY.** Using this product other than in its designed application may result in fire, injury or product damage.
- **MAKE THE CORRECT WIRING CONNECTIONS AND USE PROPER FUSE PROTECTION.** Failure to connect wiring correctly or use appropriate fuse protection may result in fire, injury or product damage. Ensure proper fusing of all system power wiring and install a 1-ampere in-line fuse (not included) with the +12V lead to the unit's power supply connector.
- **DISCONNECT THE NEGATIVE BATTERY TERMINAL BEFORE INSTALLATION.** Failure to do so may result in fire, injury or damage to the unit.
- **DO NOT ALLOW CABLES TO BECOME ENTANGLED IN SURROUNDING OBJECTS.** Arrange wiring and cables to prevent obstructions when driving. Cables or wiring that obstruct or hang up on places such as steering wheel, brake pedals, etc. can be extremely hazardous.
- **DO NOT DAMAGE VEHICLE SYSTEMS OR WIRING WHEN DRILLING HOLES.** When drilling holes in the chassis for installation, take precautions so as not to contact, puncture or obstruct brake lines, fuel lines, fuel tanks, electrical wiring, etc. Failure to take such precautions may result in fire or an accident.
- **DO NOT UTILIZE OR CONNECT TO ANY PART OF VEHICLE SAFETY SYSTEMS.** Bolts, nuts or wires used in the brake, airbag, steering or any other safety-related systems or fuel tanks should NEVER be used for mounting, power or ground connections. Using such parts may disable control of the vehicle or result in fire.

# CAUTION

- **STOP USE IMMEDIATELY IF A PROBLEM OCCURS.** Failure to do so may result in personal injury or damage to the product. Return it to your authorized Wävtech dealer.
- **HAVE AN EXPERT DO THE WIRING AND INSTALLATION.** This unit requires special technical skill and experience for wiring and installation. To insure safety and proper function, always contact the authorized dealer where you purchased the product to have it done professionally.
- **INSTALL THE UNIT SECURELY WITH SPECIFIED PARTS.** Be sure to use only the included parts and specified installation accessories (not included). Use of other than designated parts may damage this unit. Install the unit securely so that it will not come loose during a collision or sudden jolt.
- **ROUTE WIRING AWAY FROM SHARP EDGES AND MOVING PARTS.** Arrange cables and wiring away from sharp or pointed edges and avoid moving parts such as seat hinges or rails to prevent pinching or wear. Use loom protection where appropriate and always use a grommet for any wiring routed through metal.
- **NEVER RUN SYSTEM WIRING OUTSIDE OR UNDERNEATH THE VEHICLE.** All wiring must be routed, secured and protected inside the vehicle. Failure to do so may result in fire, injury or property damage.
- **INSTALL THE UNIT IN A DRY AND VENTILATED LOCATION.** Avoid mounting locations where the unit will likely be exposed to high moisture or heat without adequate ventilation. Moisture penetration or heat buildup may result in product failure.
- **REDUCE GAIN AND SOURCE VOLUME TO MINIMUM LEVELS FOR INITIAL SYSTEM TUNING AND BEFORE CONNECTION TO AN AMPLIFIER.** Ensure amplifier power is off before connecting RCA cables and follow proper system gain setting procedures. Failure to do so may result in damage to the amplifier and/or connected components.

## Package Contents:



## Accessories Required for Installation (not included):

- RCA Interconnects
- 18AWG Wire
- In-line Fuse Holder w/1A fuse
- Battery Ring Terminal
- Wire Crimp Connectors
- Grommets and Loom
- Cable Ties
- Mounting Screws

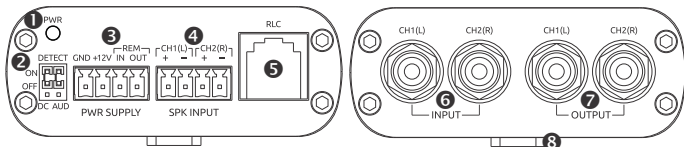
## Introduction

Welcome to Wävtech, exceptional mobile audio integration products for audiophiles. Our products are engineered to provide a truly remarkable listening experience. Built for the professional installer, our OEM integration and signal processor models are simply the best solution available for unlimited sound system upgrades while retaining the factory receiver.

## Features

- 2-Channel Line Output Converter or Line Driver
- Parametric Bass EQ
- Remote Level Control Ready
- Differential Balanced Inputs
- Low Impedance Outputs
- Variable Gain Adjustment w/Clip LED
- Selectable DC-Offset and/or Audio Detect Auto Turn-On
- Generated +12V Remote Output
- OEM Load Detect Compatible
- Locking Detachable Power/Speaker Terminals
- Panel Mount RCA Jacks
- Compact Aluminum Chassis w/Detachable Mounting Tabs

## Connections & Functions



- 1 Power Indicator:** This red LED indicates when the linkDQ is powered on. Once illuminated, there will be a short delay before audio signal output is enabled. During initial power connections, the LED may illuminate for a brief period.
- 2 Auto Turn-On Detect Jumpers:** By default, the linkDQ is set to detect both DC-offset and audio signal for turning itself on/off automatically. These jumpers allow either mode to be independently defeated for cases where only one turn-on mode is preferred or to bypass both modes when a switched +12V trigger is available and connected to the REM IN terminal.
- 3 Power Supply Terminal:** For +12V battery, chassis ground, remote in and remote output wire connections. A minimum of 18AWG wire is recommended for power and ground connections. Always protect the +12V power wire with a 1-amp fuse.

- 4 **Speaker Level Input Terminal:** For left and right channel speaker level (a.k.a. high level) connections to the source. Input signals ranging from 2Vrms to 20Vrms will produce up to 10Vrms RCA output from maximum to minimum gain. For factory amplifiers with more than 20Vrms signal or if the linkDQ's output is too high for the connected aftermarket amplifier(s) with all gains at minimum, internal jumpers are available to reduce the input sensitivity range by half (-6dB) for 4Vrms up to 40Vrms.
- 5 **Remote Level Control Jack:** This RJ45 jack is for connecting the linkRC remote level controller (sold separately) to the main unit via its supplied cable or any standard ethernet cable.
- 6 **RCA Input Jacks:** For left and right channel low level (a.k.a. line level) signal connections to the source unit. Input signals ranging from 0.5Vrms to 5Vrms will produce up to 10Vrms RCA output at maximum to minimum gain. These inputs are differential, but may be set to unbalanced via internal jumpers if necessary.
- 7 **RCA Output Jacks:** For left and right channel line level signal connections to your amplifier(s). Use quality interconnects to ensure stable connection and minimize the possibility for induced noise.
- 8 **Mounting Tabs:** These mounting tabs are pre-attached and should be used to properly secure the linkDQ during installation with screws or cable ties. They are removable if the unit can be safely secured by another method.

## Installation & System Wiring

It is important to read this manual thoroughly before starting your installation and always plan accordingly. Before installing any Wävtech product, disconnect the negative (ground) wire from the vehicle's battery to avoid damage to the vehicle or yourself. Following all guidelines will help provide years of enjoyment with your Wävtech linkDQ audio interface.

**Ground Connection (GND):** The GND terminal must be connected to a metal part of the vehicle that is welded to the vehicle body with ground plane back to the main battery ground attachment point (a.k.a. chassis ground). This wire should be a minimum of 18AWG and as short as possible to minimize potential for noise to enter the system. The chassis ground connection point should have all of the paint removed and be scuffed to the bare metal. The ground wire should be terminated by a ground specific interlocking terminal such as the included EARL terminal or a ring terminal securely bolted to the vehicle with star or lock washer and nut to prevent from coming loose. Avoid using factory ground points to reduce the chance of induced noise from other components.

**Power Connection (+12V):** The constant power connection should be made at the vehicle battery when possible. For direct battery connection, a 1-amp fuse must be installed in-line with the power wire within 18" of the battery and securely connected to the positive battery terminal bolt with a ring terminal. If connecting to another available constant +12V power source, a 1-amp in-line fuse must be added at the connection point. The power wire should be a minimum of 18AWG. Do not install the fuse until all other system connections have been made.

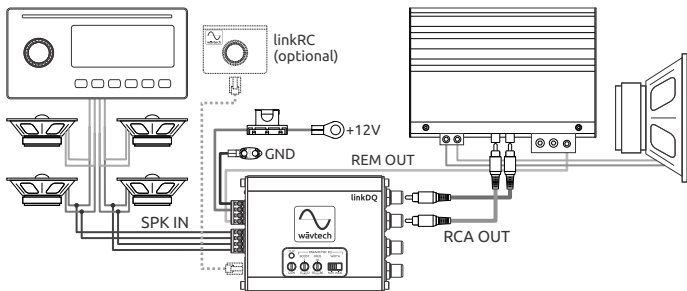
**Speaker Level Input (SPK):** Connect the speaker wires from the source unit to corresponding terminals on the interface. Use the SPK input if your source unit is not equipped with RCA outputs. Always ensure the correct polarity of each channel when making these connections, as failure to do so can severely effect sound performance.

**Remote Input (REM IN):** If a switched +12V or remote trigger wire is available, it is recommended to connect it to the REM IN terminal. If unavailable, the linkDQ also has an auto turn-on circuit that simultaneously detects audio signal from SPK and RCA inputs as well as DC-offset from SPK inputs. While auto turn-on will work well in most applications, a +12V trigger may be required for satisfactory results under certain vehicle or system conditions. Additionally, DC-offset and/or audio signal detect functions can be independently defeated via the external jumpers if necessary.

**Remote Output (REM OUT):** Use the remote output to provide a +12V trigger to turn on amplifiers or other aftermarket devices. This +12V output is generated internally by the interface when turned on either by REM IN or automatic sensing, and will provide over 500mA of continuous current for external devices.

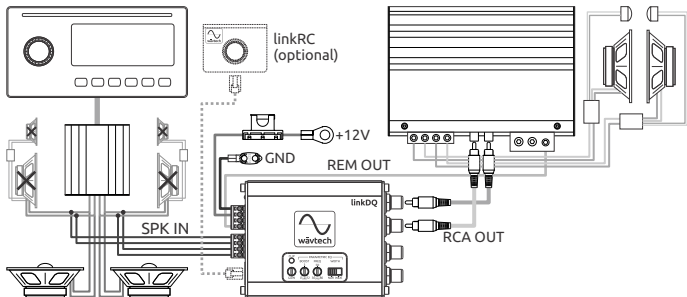
## System Examples

### Example-1: Speaker Level Input from OEM Radio



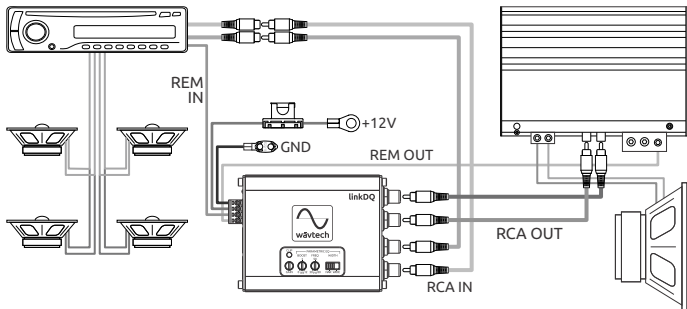
**Note:** When using the factory radio to drive speakers directly and provide the linkDQ with signal, the speakers will likely distort before reaching the radio's maximum volume setting. Adjust gain accordingly for optimum volume range.

## Example-2: Speaker Level Input from OEM Amplifier



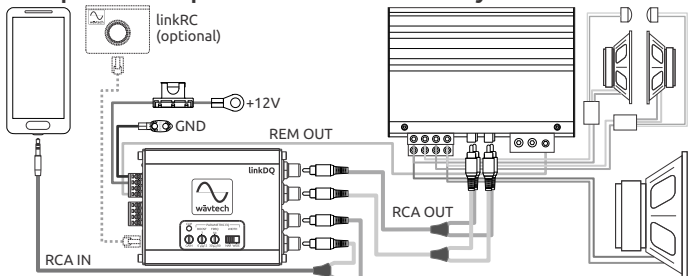
**Note:** In factory amplified systems where output from the radio is a fixed level or digital, input signal for the linkDQ should be connected after the OEM amplifier at its outputs. High voltage factory amplifiers may require changing the linkDQ's internal input sensitivity range jumpers to the 40V position.

## Example-3: RCA Input from Aftermarket Radio



**Note:** Driving speakers from an aftermarket receiver while also using its RCA preouts for an external amplifier will often result in a large gain imbalance due to the speaker outputs reaching clipping well before the radio's maximum volume setting where the RCA preout level is very low. For such systems, use the linkDQ as a line driver to match the unclipped volume range of the deck powered speakers with the external amplifier set at minimum gain to maximize power output, dynamic range and signal-to-noise.

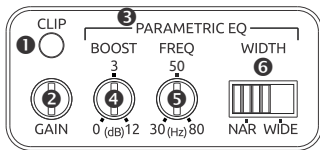
## Example-4: RCA Input from Portable Audio Player



**Note:** Portable devices such as smartphones typically have an output voltage of 1Vrms or less. If using the device as the system's volume control, it may be necessary to adjust gain vs. volume range for consistent auto turn-on behavior. For optimal signal range and convenient master volume control, the linkRC remote level controller is recommended (sold separately).

## Top Panel Adjustments

- 1 Clipping Indicator:** This yellow LED indicates when the linkDQ's output reaches maximum signal level before clipping (distortion) occurs. It will be dimly lit just before the onset of clipping, and full bright at clipping. Since the linkDQ can produce up to 10Vrms, its gain will usually be set well below this point while still maximizing your amplifier(s) input capability at minimum gain.
- 2 Gain Adjustment:** This adjustment is for matching the output of the linkDQ with the maximum unclipped signal provided by your source and the maximum input capability of your amplifier(s). Follow proper gain setting procedures to ensure optimum source volume range without clipping at any point within the signal chain while minimizing the ability to overdrive the system. Readjustment may be necessary after any changes to other level or EQ settings.
- 3 Parametric EQ:** This section provides adjustments for a single parametric EQ band with the tuning flexibility required for differences between vehicles, subwoofers and enclosures.
  - 4 Boost:** Sets the amount of boost applied at the center frequency ( $F_c$ ), adjustable up to +12dB.
  - 5 Frequency:** Sets the center frequency ( $F_c$ ) of the EQ band, adjustable from 30Hz to 80Hz.
  - 6 Width:** This switch selects the width ( $Q$ ) of the EQ band between narrow and wide.





## Specifications

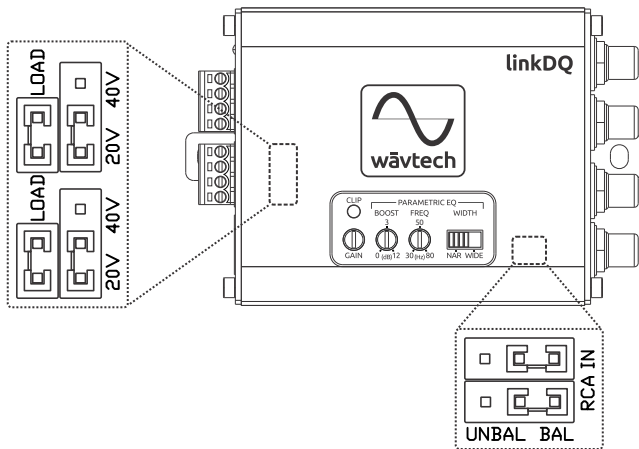
<b>Frequency Response</b>	Max Flat (+0/-1dB)		<10Hz to >70kHz
	Extended (+0/-3dB)		<10Hz to >100kHz
<b>Input Impedance</b>	Spk Input		180Ω / 20kΩ
	RCA Input		20kΩ
<b>Input Sensitivity</b>	Spk Input (max-min gain)		2-20Vrms / 4-40Vrms
	RCA Input (max-min gain)		0.5-5Vrms
<b>Max Input Voltage</b>	Spk Input	peak, <5sec cont.	40Vrms
<b>Output Impedance</b>			<50Ω
<b>Max Output Voltage</b>	at 1% THD+N		>10Vrms
<b>THD+N</b>	Spk Input at 10V output		<0.04%
	RCA Input at 10V output		<0.04%
<b>S/N</b>	Spk Input	at 1V output	>96dBA
		at 4V output	>107dBA
		at 10V output	>115dBA
	RCA Input	at 1V output	>97dBA
		at 4V output	>108dBA
		at 10V output	>116dBA
<b>Parametric EQ</b>	Boost		0dB to +12dB
	Frequency (Fc)		30Hz - 80Hz
	Width (Q), avg. wide to narrow		2 to 5
<b>Remote Level Control</b>	Volume Range		0dB to -30dB
<b>Turn-On Trigger</b>	Remote	via REM IN	>10.5V
	DC-offset	via Spk Input	>1.3V
	Audio Signal	via Spk Input	<100mV
		via RCA Input	<10mV
		Turn-off Delay	up to 60sec
<b>Remote Output</b>	Current Capacity		>500mA
	Voltage		Within 3% of B+
<b>Current Draw</b>	Max Draw (w/o REM OUT)		<270mA
	Sleep Current		<1.8mA
<b>Operating Voltage</b>	Power On (B+)		10.5V-18V
	Power Off (B+)		<8.5V
<b>Product Dimensions</b>	Chassis (not incl. terminals/jacks)		1.14"x2.95"x3.52"
			28.9x74.9x89.5mm

### Notes:

- Spk input sensitivity range is selectable per channel via internal jumpers (20V/40V)
- Spk input loading is defeatable per channel via internal jumpers (LOAD)
- DC-offset and/or audio detect are defeatable via external jumpers (DC, AUD)
- Remote level controller (linkRC) is sold separately
- All specifications are subject to change without notice

## Internal Jumper Locations and Settings

While all Wāvtech models provide external controls for main adjustments, there are also a few internal configuration jumpers available to resolve certain special vehicle or system conditions. The linkDQ's internal jumper locations and default settings are shown in the illustration below. To access these jumpers, simply remove the two top screws from each end panel and loosen two bottom screws on one side in order to easily remove the chassis top cover. It is recommended to detach the power supply connector first to ensure that the unit is completely powered off while making any jumper changes.



### Notes:

- Input sensitivity range jumpers (20V/40V) are independent for each SPK input channel, so may be set differently between channels as system conditions require.
- Load bypass jumpers (LOAD) are independent for each SPK input channel and must be removed or moved to a single pin in order to disconnect the internal loading from that channel.
- Both RCA balanced-unbalanced input jumpers (BAL/UNBAL) should be moved together if changed.

## Warranty & Service Care

Wāvtech warrants this product to be free from defects in material and workmanship for a period of one (1) year when purchased from an authorized Wāvtech retailer within the United States. This warranty will be extended to a period of two (2) years when the installation is performed by an authorized Wāvtech retailer. A valid sales receipt is required to verify eligibility of purchase and installation.

This warranty is valid only to the original purchaser and is not transferrable to subsequent parties. This warranty is void if the product serial number has been altered or removed. Any applicable implied warranties are limited in duration to a period of express warranty as provided herein beginning with the date of the original purchase at retail, and no warranties, whether expressed or implied, shall apply to this product thereafter. Some states do not allow limitations on implied warranties, therefore these exclusions may not apply to you. This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

If your product needs service, you should contact Wāvtech Customer Service to receive a Return Authorization (RA) Number. Any product received without an RA number will be returned to sender. Once your product is received and inspected by customer service, Wāvtech at its sole discretion, will be repair or replace it with a new or remanufactured product at no charge. Damage caused by the following is not covered under warranty: accident, abuse, failure to follow instructions, misuse, modification, neglect, unauthorized repair or water damage. This warranty does not cover incidental or consequential damages. This warranty does not cover the cost of removing or reinstalling the product. Cosmetic damage and normal wear are not covered under warranty.

### For Service within the United States:

Wāvtech Customer Service: (480) 454-7017  
Monday – Friday, 8:30am to 5:00pm MST

Serial Number: \_\_\_\_\_

Installation Date: \_\_\_\_\_

Place of Purchase: \_\_\_\_\_

### Important Notice for International Customers:

For products purchased outside the United States of America or its Territories, please contact your local distributor concerning specific procedures for your country's warranty policy. International purchases are not covered by Wāvtech, LLC.

**Wāvtech<sup>®</sup>**

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