NAV-TV

INTERFACING THE FUTURE

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ZEN AUDIO

ZEN A2B PLUS

GM + Ford A²B® to 8-channel Analog & Digital sound processor

NTV-KIT1033

A2B Automotive Audio Bus









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WARNING: Due to most new vehicles being made of an aluminum alloy, the ZEN-A2B PLUS must be used with amplifiers that are grounded directly to the battery. The resistance to (true battery) ground of the Amplifier(s) *must not exceed 1 ohm, otherwise you will likely experience performance issues or damage the ZEN-A2B PLUS*.

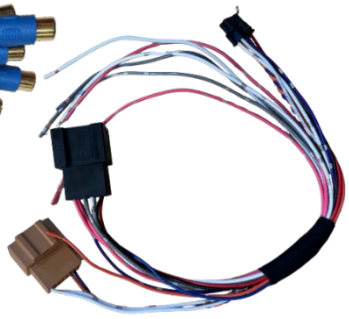
Overview

The ZEN A2B PLUS seamlessly converts 2018-2024 Ford, 2025+ GM factory A²B® (Automotive Audio Bus) to 8-channel analog RCA and TOSLINK output. The ZEN A2B PLUS seamlessly converts the A2B signal from these factory head units to the highest possible quality outputs. This kit integrates with the OEM A²B® bus to retain volume control, full fade (analog only) and balance, treble, mid-range, bass control, chime level control & Bluetooth voice calls with no external speaker (true OEM integration).

Kit Content



ZEN RCA Harness



GM Power & Data Harness



GM Speaker Harness

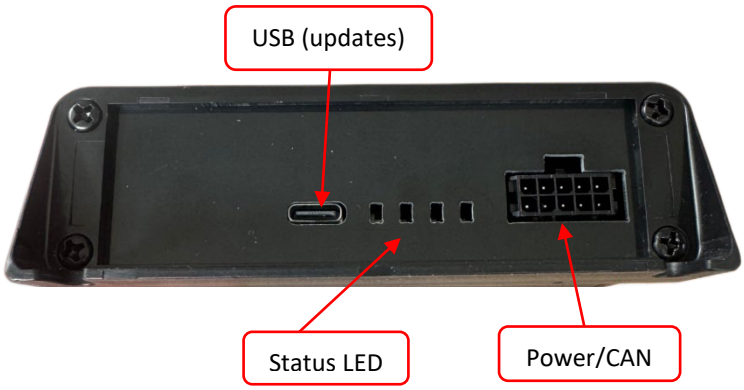


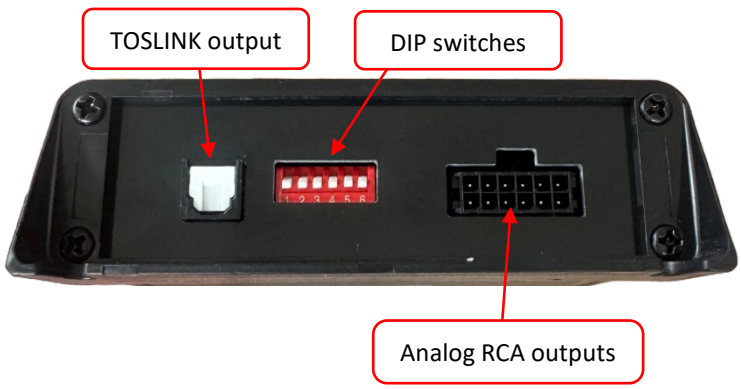
Ford Power, Data & Speaker Harness



USB C Cable

ZEN A2B PLUS + Overview

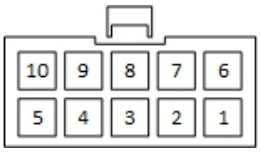




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Power/CAN Connector Pin-Out

Pin #	Description	Color
1	Ground (-)	Black
2	Remote Output	Blue
8	A2B In +	Purple
3	A2B In -	Orange
9	A2B out -	Orange/silver
4	A2B out +	Purple/silver
5	CAN HI	White
6	Constant 12v (+)	Red
10	CAN LO	White/silver



Wire Side

LED Status Indication

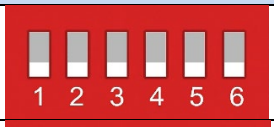
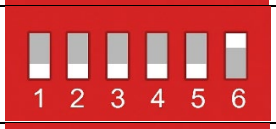
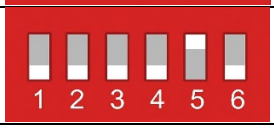


LED #	Indication
1	Unit booted and on
2	DSP activity
3	*CAN and A2B traffic*
4	*CAN active*

Under normal operation, you should see LED 1 and 4 active, and LED 2 blinking.

Vehicle Selection

Vehicle selection is via the DIP switches. The following vehicle configurations are supported:

DIP Switch Setting	Vehicle Selection
	Ford A2B G1.x (2018 - 2024)
	GM A2B
	Ford A2B G1.x F150 Unleashed (2024)

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Vehicle Options

Vehicle selection itself is done in the Vehicle Selection section, this section is for other vehicle options.

The DIP switch position 1 is used only for enabling/disabling the Ford A2B ACM upstream channels. By default, these are enabled with the switch down.

DIP Switch Setting	Vehicle Option
	When Ford vehicle is selected, upstream ACM channels are **ENABLED**
	When Ford vehicle is selected, upstream ACM channels are **DISABLED**

ZEN-A2B PLUS Installation – Ford/GM

1. For ZEN-A2B PLUS installations, the factory amplifier must be removed and the ZEN unit can be installed into its place.

2. After locating the factory amplifier, disconnect it entirely as it will no longer be in use. With the vehicle off, connect the provided ZEN harness to the (previously removed) OEM amplifier connectors. See the Power/CAN Connector pin-out chart (just for reference) in the overview section.

1. Connect the vehicle specific harnesses:
   Ford:
   a. Connect the OEM *A²B®* (USB) connector removed from the OEM amplifier to the blue ***A2B plug*** on the ZEN Ford Power, Data & Speaker Harness.
   GM:
   a. Connect the ZEN GM Power & Data Harness (black and brown harness) to the factory amplifier's harness.
   b. Connect the ZEN GM Speaker Harness (green harness) to the output of your aftermarket amplifier.
   NOTE: GM requires both the Power & Data harness *and* the Speaker Harness.

3. Connect the ***blue*** wire (PIN 2) to the remote input on the amplifier.

4. If using analog RCAs for signal to the amplifier, connect according to the reference chart below.
   WARNING: Do not connect RCA cables to this interface until all amplifiers/external processors are properly grounded. Failure to do this may cause damage to the interface and VOID the warranty!

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RCA	1	2	3	4	5	6
Channel	Left Front	Right Front	Left Rear	Right Rear	Center	Sub

5. If using TOSLINK for signal to the amplifier, connect the cable to the TOSLINK port shown on page 2.
   NOTE: both Analog and Digital output sound simultaneously, regardless of which type is used.

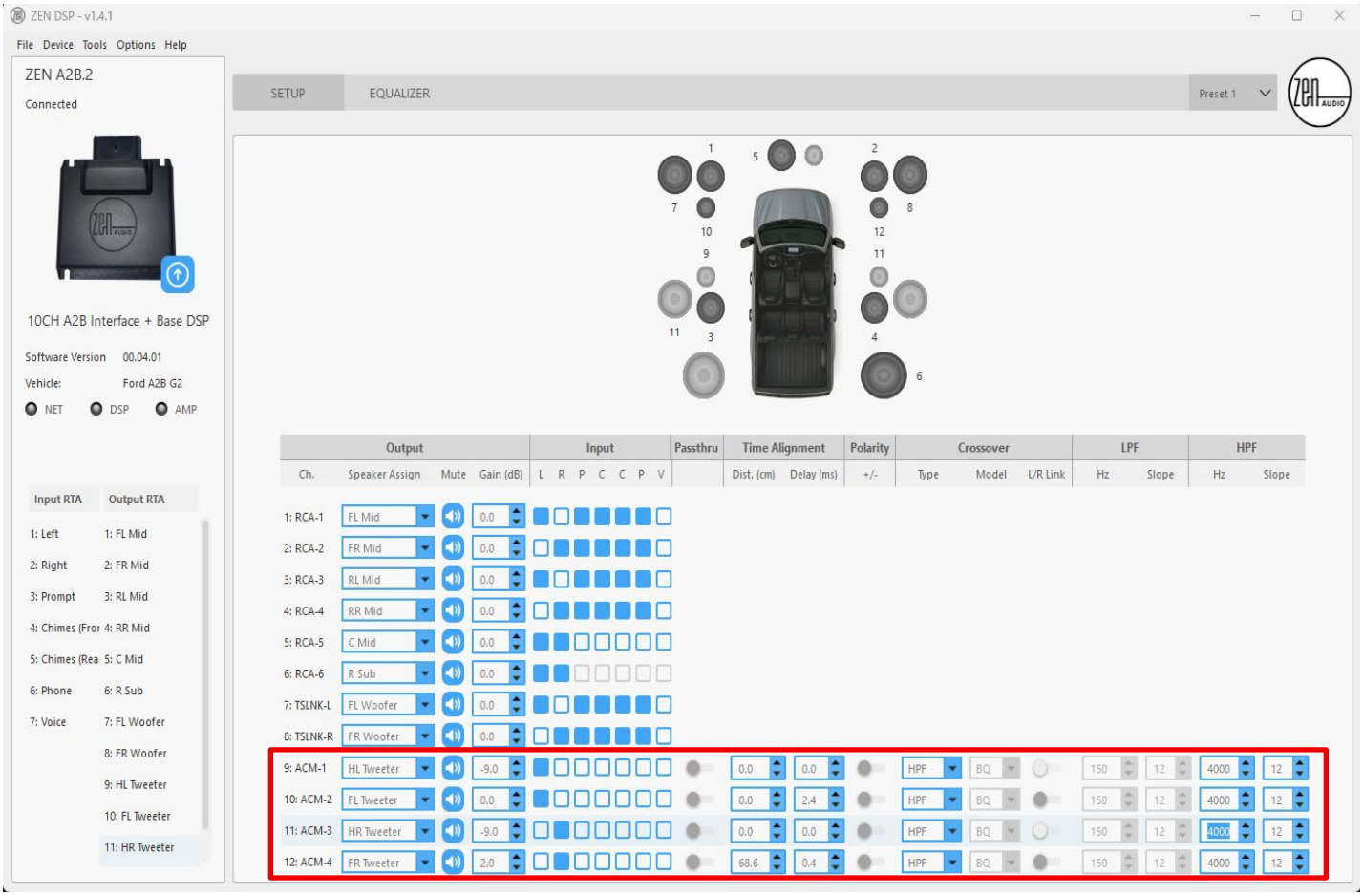
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ACM Channel Control (Ford only)

The ZEN-A2B PLUS can control channels connected to the Ford factory ACM (Audio Control Module). This module is located behind the SYNC display and amplifies different speakers on different Ford vehicles:

- F150/250 8 Speaker B&O – Front A pillar tweeter
- F250/350/450 Unleashed – Front A pillar tweeters, headliners and headrest speakers
- F150 Unleashed (2021 – 2024) - Rear door and front tweeters
- F150 Unleashed (2024) – Headliner, headrest and Front tweeters
- Bronco 2022 – 2024 – Center channel and rear pods
- Explorer – D Pillar speakers and front tweeters
- Expedition – D Pillar speakers and Front tweeters

There are pre-set tunes at factory reset that are selectable by the DIP switches for the Ford ACM channels, however these are also fully adjustable through the ZEN DSP Windows and macOS application. Below is an overview of where the pre-set tune parameters are and how to adjust these through the ZEN DSP application.



The section outlined in red above is where the ACM channels crossover, gain, polarity, and time alignment can be adjusted.

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The ACM channel EQs can also be adjusted, to allow for full tuning of these channels. To adjust the channel EQ, simply select the *Equalizer* tab from the top left. The EQ screen will then be presented. Select the desired channel from the dropdown box in the bottom left.

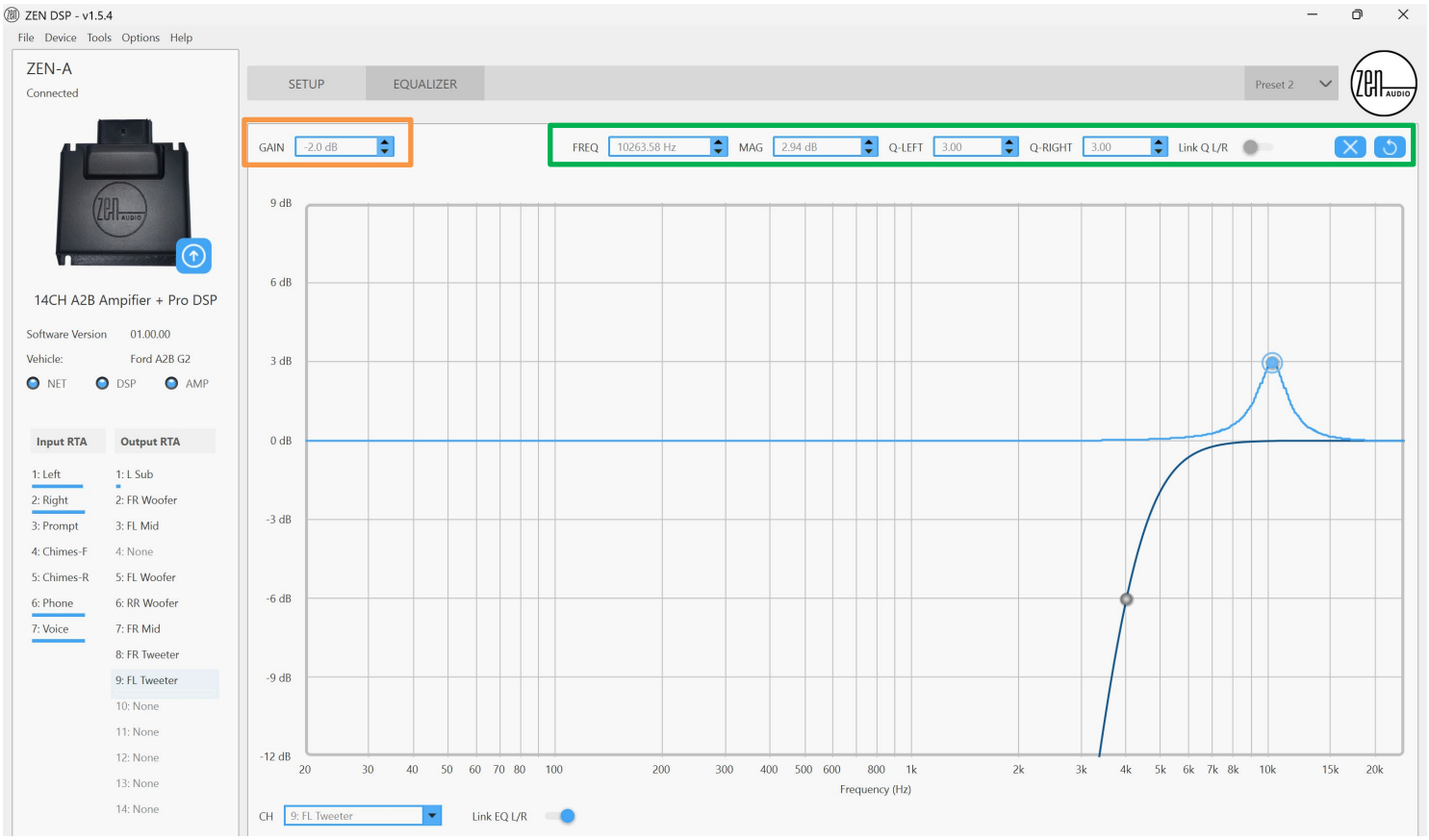
To add EQ points, click anywhere on the graph. Up to 64 points can be added.

You can adjust an EQ point's magnitude and frequency by simply clicking and dragging the point.

To manually adjust the Q-factor, frequency or magnitude of an EQ point, click the point and then adjust the values in the boxes as shown in the green outlined box.

To remove an EQ point, select it and click the X button. Click the refresh button to reset the whole EQ (also included in the green outlined box).

Overall channel gain be adjusted from the gain box outlined in orange.



ACM Preset Tune Selection (Ford only)

The pre-set tunes for the Ford ACM channels are selected using the vehicle selection via the DIP switch settings, see the Vehicle Selection section above for more information.

The following tuning settings will display for the Ford ACM channels for each Ford vehicle setting.

Ford A2B G1.1 (2021-2023):

Output				Input Mixing	Bypass	Time Alignment		Polarity	Crossover			HPF		LPF	
Ch.	Speaker Assign	ute	Gain (dB)	L R P B P V		Dist. (in)	Delay (ms)	+/-		Type	L/R Link	Hz	Slope	Hz	Slope
9: ACM-1	RL Woofer		-3.0				82.3	0.00		HPF		100	12	150	12
10: ACM-2	FL Tweeter		0.0				0.0	2.40		HPF		4000	12	150	12
11: ACM-3	RR Woofer		-3.0				82.3	0.00		HPF		100	12	150	12
12: ACM-4	FR Tweeter		2.0				68.6	0.40		HPF		4000	12	150	12

Ford A2B G1.1 (2024):

Output				Input Mixing	Bypass	Time Alignment		Polarity	Crossover			HPF		LPF	
Ch.	Speaker Assign	ute	Gain (dB)	L R P B P V		Dist. (in)	Delay (ms)	+/-		Type	L/R Link	Hz	Slope	Hz	Slope
9: ACM-1	HL Tweeter		-9.0				82.3	0.00		HPF		4000	12	150	12
10: ACM-2	FL Tweeter		0.0				0.0	2.40		HPF		4000	12	150	12
11: ACM-3	HR Tweeter		-9.0				82.3	0.00		HPF		4000	12	150	12
12: ACM-4	FR Tweeter		2.0				68.6	0.40		HPF		4000	12	150	12

Ford A2B G1 (2018-2021):

Output				Input Mixing	Bypass	Time Alignment		Polarity	Crossover			HPF		LPF	
Ch.	Speaker Assign	ute	Gain (dB)	L R P B P V		Dist. (in)	Delay (ms)	+/-		Type	L/R Link	Hz	Slope	Hz	Slope
9: ACM-1	RL Woofer		-3.0				82.3	0.00		HPF		100	12	150	12
10: ACM-2	FL Tweeter		0.0				0.0	2.40		HPF		4000	12	150	12
11: ACM-3	RR Woofer		-3.0				82.3	0.00		HPF		100	12	150	12
12: ACM-4	FR Tweeter		2.0				68.6	0.40		HPF		4000	12	150	12

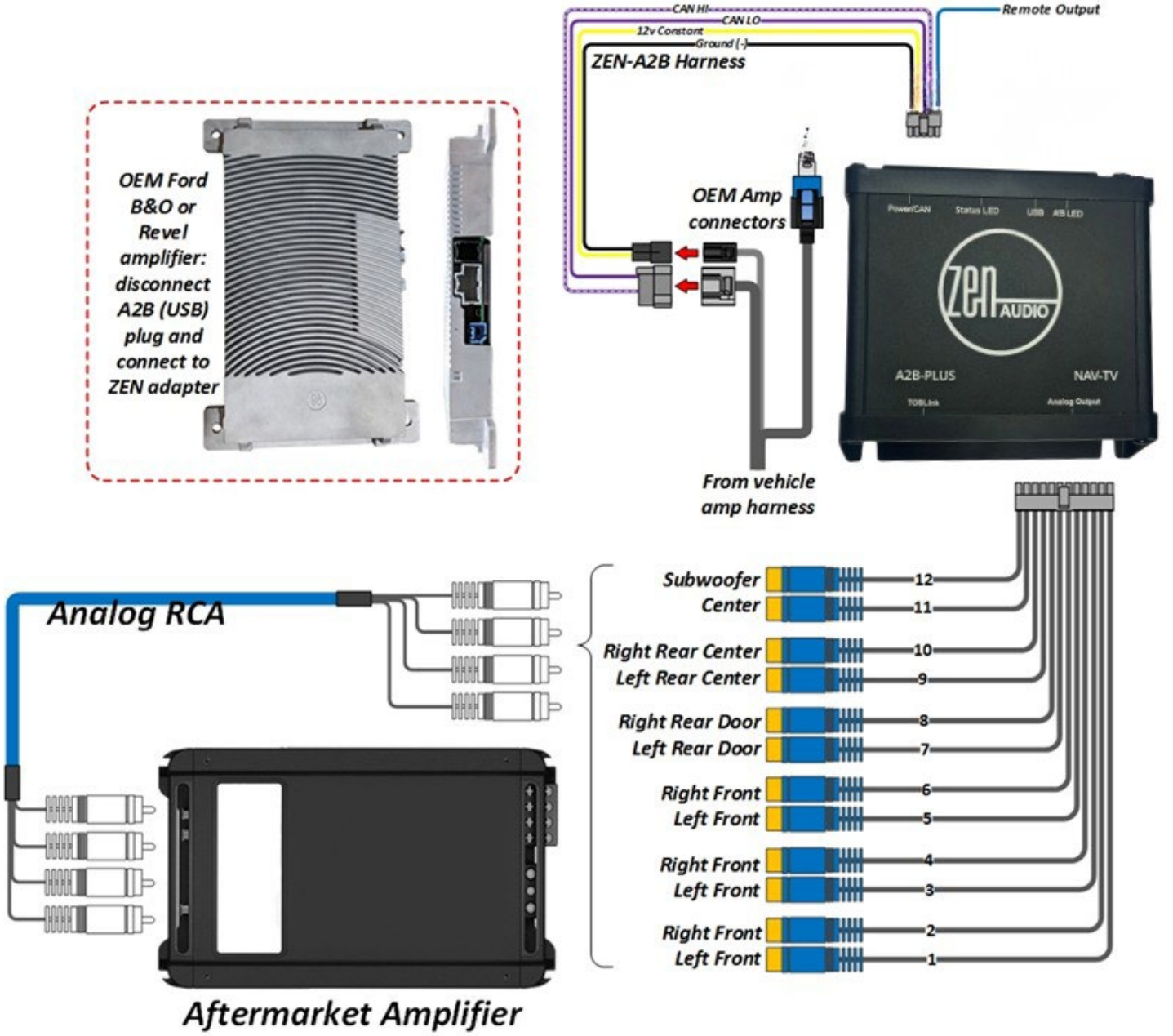
OEM Ford B&O amplifier connector pin out

As there are many different B&O amplifiers, please check the addition install documentation on the website.

https://navtv.com/media/products_file/2026/01/03/Zen_ford_speaker_pinouts.pdf

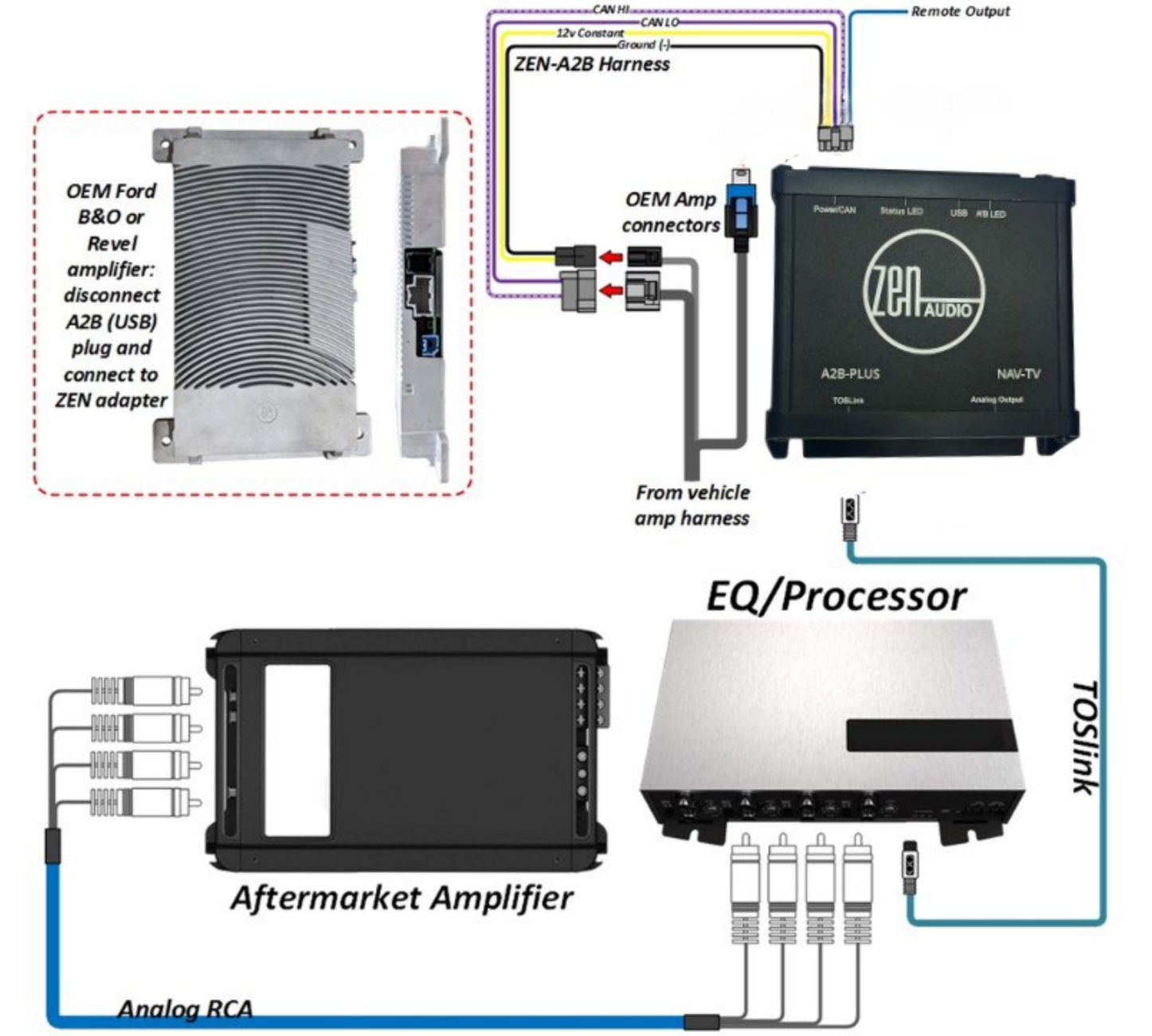
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ZEN-A2B PLUS System Layout Ford (Analog)



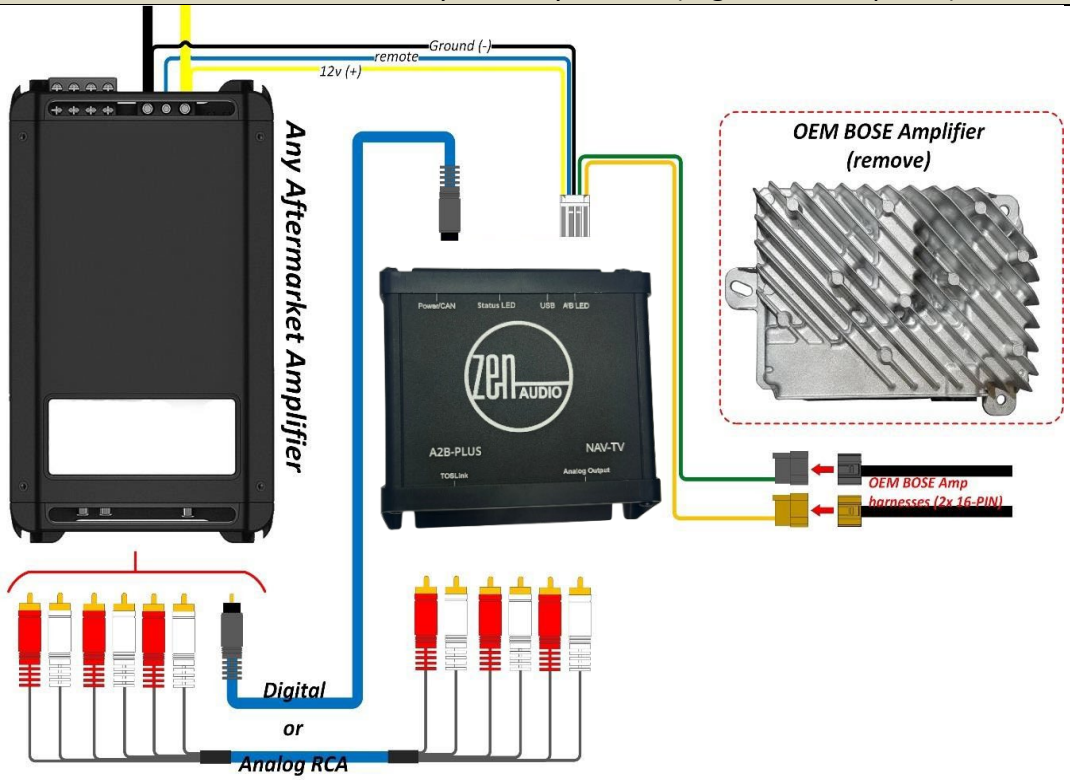
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ZEN-A2B PLUS System Layout Ford (Digital TOSLINK)

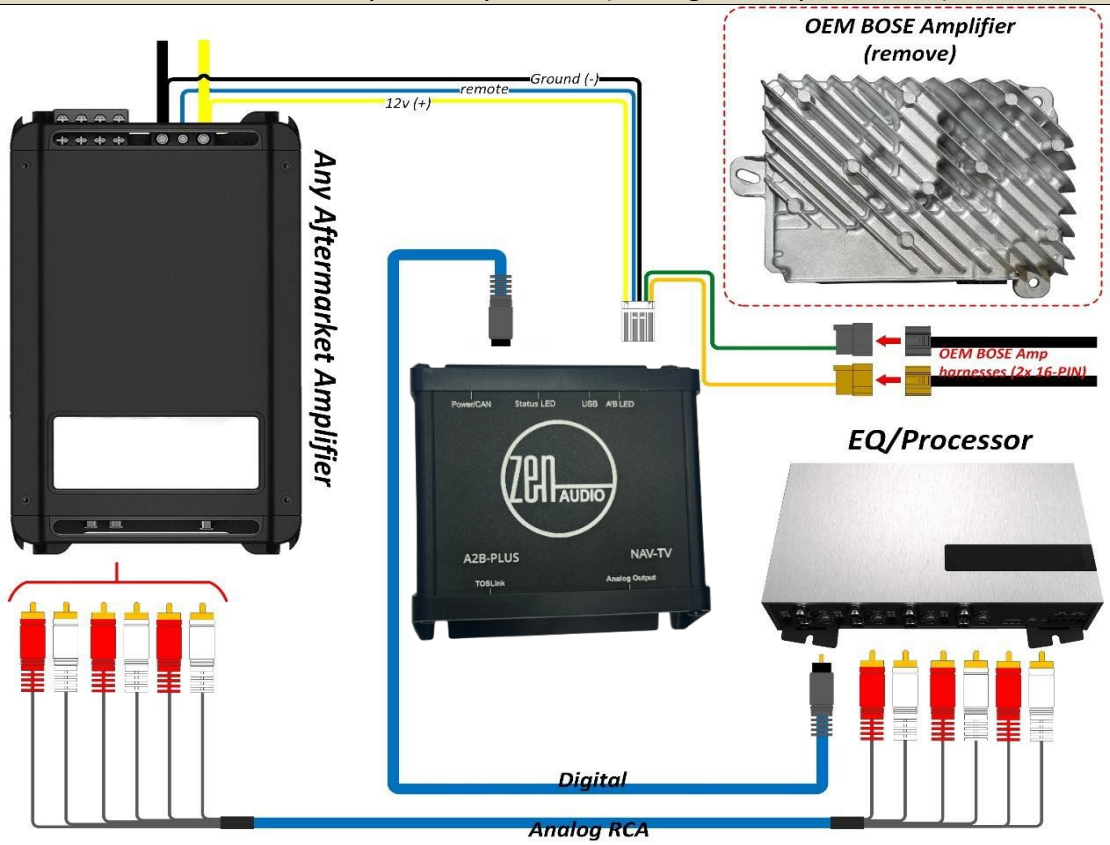


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ZEN-A2B PLUS System Layout GM (Digital DSP amplifier)

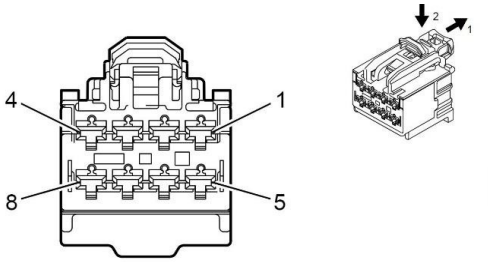


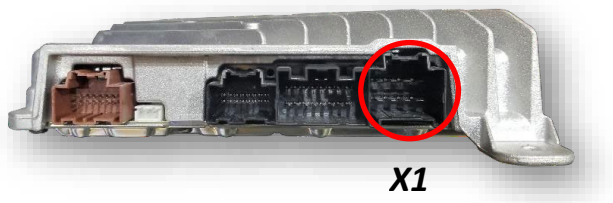
ZEN-A2B PLUS System Layout GM (Analog RCA separate DSP)



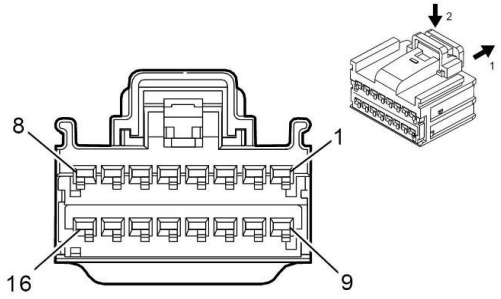
GM BOSE Amplifier Pinout

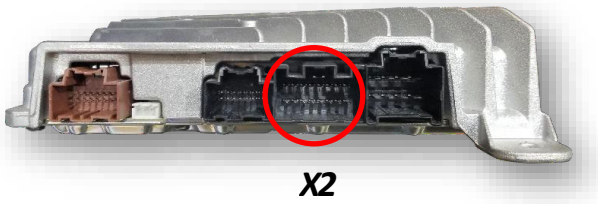
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BU/GY	(1) 346	(1) Left/Rear Subwoofer Speaker Control (+)	(1) I	(1) –
(2) 2	(2) 1.5	(2) YE	(2) 200	(2) Right Front Speaker Control (+) 1	(2) I	(2) –
(3) 3	(3) 1.5	(3) BU	(3) 201	(3) Left Front Speaker Control (+) 1	(3) I	(3) –
(4) 4	(4) 3	(4) RD/YE	(4) 3740	(4) Battery Positive Voltage	(4) I	(4) –
(5) 5	(5) 1	(5) GN/BK	(5) 1794	(5) Left/Rear Subwoofer Speaker (-) Low Reference	(5) I	(5) –
(6) 6	(6) 1.5	(6) YE/BK	(6) 117	(6) Right Front Speaker Signal (-) 1	(6) I	(6) –
(7) 7	(7) 1.5	(7) BN/BU	(7) 118	(7) Left Front Speaker Signal (-) 1	(7) I	(7) –
(8) 8	(8) 3	(8) BK/WH	(8) 1851	(8) Signal Ground	(8) I	(8) –





Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU/VT	(1) 1857	(1) Left Front Midrange Speaker Control (+)	(1) I	(1) –
(2) 2	(2) 0.75 (2) 0.75	(2) BN/BK (2) YE/GN	(2) 1975 (2) 1855	(2) Right Front Speaker (-) 2 Low Reference (2) Right Rear Midrange Speaker Control (+)	(2) II (2) I	(2) UQA (2) UQS
(3) 3	(3) 0.5 (3) 0.5	(3) BU/VT (3) YE/BN	(3) 1874 (3) 1859	(3) Left Front Speaker Control (+) 2 (3) Left Rear Midrange Speaker Control (+)	(3) I (3) I	(3) UQA (3) UQS
(4) 4	(4) 0.75 (4) 0.75	(4) BN/GN (4) WH	(4) 1852 (4) 46	(4) Right Front Tweeter Speaker Control (+) (4) Right Rear Speaker Control (+)	(4) I (4) I	(4) UQA (4) UQS
(5) 5	(5) 0.5 (5) 0.5	(5) YE/BU (5) GN	(5) 1856 (5) 199	(5) Left Front Tweeter Speaker Control (+) (5) Left Rear Speaker Control (+)	(5) I (5) I	(5) UQA (5) UQS
(6) 6	(6) 1 (6) 0.5	(6) WH (6) YE/GN	(6) 46 (6) 1855	(6) Right Rear Speaker Control (+) (6) Right Rear Midrange Speaker Control (+)	(6) I (6) I	(6) UQA (6) UQS
(7) 7	(7) 1 (7) 0.5	(7) GN (7) YE/BN	(7) 199 (7) 1859	(7) Left Rear Speaker Control (+) (7) Left Rear Midrange Speaker Control (+)	(7) I (7) I	(7) UQA (7) UQS
(8) 8	(8) 0.75 (8) 1.5	(8) YE/WH (8) VT/GN	(8) 1860 (8) 5756	(8) Front Center Speaker Control (+) (8) Center Console Speaker Control (+)	(8) I (8) III	(8) UQA (8) UQS
(9) 9	(9) 0.5	(9) BU/BN	(9) 1957	(9) Left Front Midrange Speaker (-) Low Reference	(9) I	(9) –
(10) 10	(10) 0.75 (10) 0.75	(10) GY/BU (10) GN/BU	(10) 1955 (10) 1875	(10) Right Rear Midrange Speaker (-) Low Reference (10) Right Front Speaker Control (+) 2	(10) I (10) I	(10) UQA (10) UQS
(11) 11	(11) 0.5 (11) 0.5	(11) WH/BK (11) GY/BK	(11) 1959 (11) 1974	(11) Left Rear Midrange Speaker (-) Low Reference (11) Left Front Speaker (-) 2 Low Reference	(11) I (11) II	(11) UQA (11) UQS
(12) 12	(12) 0.75 (12) 0.75	(12) VT/BN (12) BU/BK	(12) 1952 (12) 115	(12) Right Front Tweeter Speaker (-) Low Reference (12) Right Rear Speaker Signal (-)	(12) I (12) I	(12) UQA (12) UQS
(13) 13	(13) 0.5 (13) 0.5	(13) YE/GY (13) GN/BK	(13) 1956 (13) 116	(13) Left Front Tweeter Speaker (-) Low Reference (13) Left Rear Speaker Signal (-)	(13) I (13) I	(13) UQA (13) UQS
(14) 14	(14) 1 (14) 0.5	(14) BU/BK (14) GY/BU	(14) 115 (14) 1955	(14) Right Rear Speaker Signal (-) (14) Right Rear Midrange Speaker (-) Low Reference	(14) I (14) I	(14) UQA (14) UQS
(15) 15	(15) 1 (15) 0.5	(15) GN/BK (15) WH/BK	(15) 116 (15) 1959	(15) Left Rear Speaker Signal (-) (15) Left Rear Midrange Speaker (-) Low Reference	(15) I (15) I	(15) UQA (15) UQS
(16) 16	(16) 1.5 (16) 0.75	(16) BN/BU (16) BU/YE	(16) 5766 (16) 1960	(16) Console Center Speaker (-) Low Reference (16) Front Center Speaker (-) Low Reference	(16) III (16) I	(16) UQA (16) UQS





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ZEN A2B PLUS General Installation Notes

- With A²B, if the power or (A2B) is ever removed from the ZEN module, the vehicle will require a CAN reset once or twice to regain normal OEM functionality (chimes, etc). CAN-reset procedure:
    1. Turning off ignition
    2. Close all doors
    3. Let the vehicle 'go to sleep' for ~10 minutes (without touching it)
    4. Return and test
- ***VITAL:*** For installations with this ZEN processor, make certain that any added amplifier's *ground* resistance (reference vehicle battery ground) ***does not exceed 1 ohm.***
- If engine noise is introduced through system with the ZEN, match the interface's ground wire to the aftermarket amplifier's ground to eliminate any ground loop.
- If you've installed a third-party DSP (receiving signal from the ZEN, before the amplifier) and you're having issues with *audio bleeding from one channel to another, echoing Bluetooth phone calls or any other signal processing issues,* ***rule out the ZEN first by temporarily bypassing the third-party DSP and running signal directly from the ZEN to the amplifier(s) and verify the problem still exists before calling technical support.***
- As the ZEN-A2B PLUS is an aftermarket interface, there may be subtle differences in functionality compared to the factory amplifier. Please contact NAV-TV if you notice any differences that need to be addressed. We are committed to providing a product that works seamlessly with your vehicle.
- ***Tuning tips:***
    1. Before beginning tuning process (especially with external EQ/Processors), set Bass & Treble on the head unit for each source to flat (0).
    2. *Begin with amplifier/EQ gains all the way* ***down.***
    3. *With dynamic music playing, adjust the radio volume to maximum.*
    4. *Adjust the amplifier/EQ gains to desired maximum level.*

ZEN Configuration: Output Control via ZEN DSP

To access the ZEN configuration tool, first download ZEN DSP from the ZEN A2B plus product page on navtv.com. Use the provided USB-C cable from the ZEN module to the computer. Open ZEN DSP and wait for the device to connect.

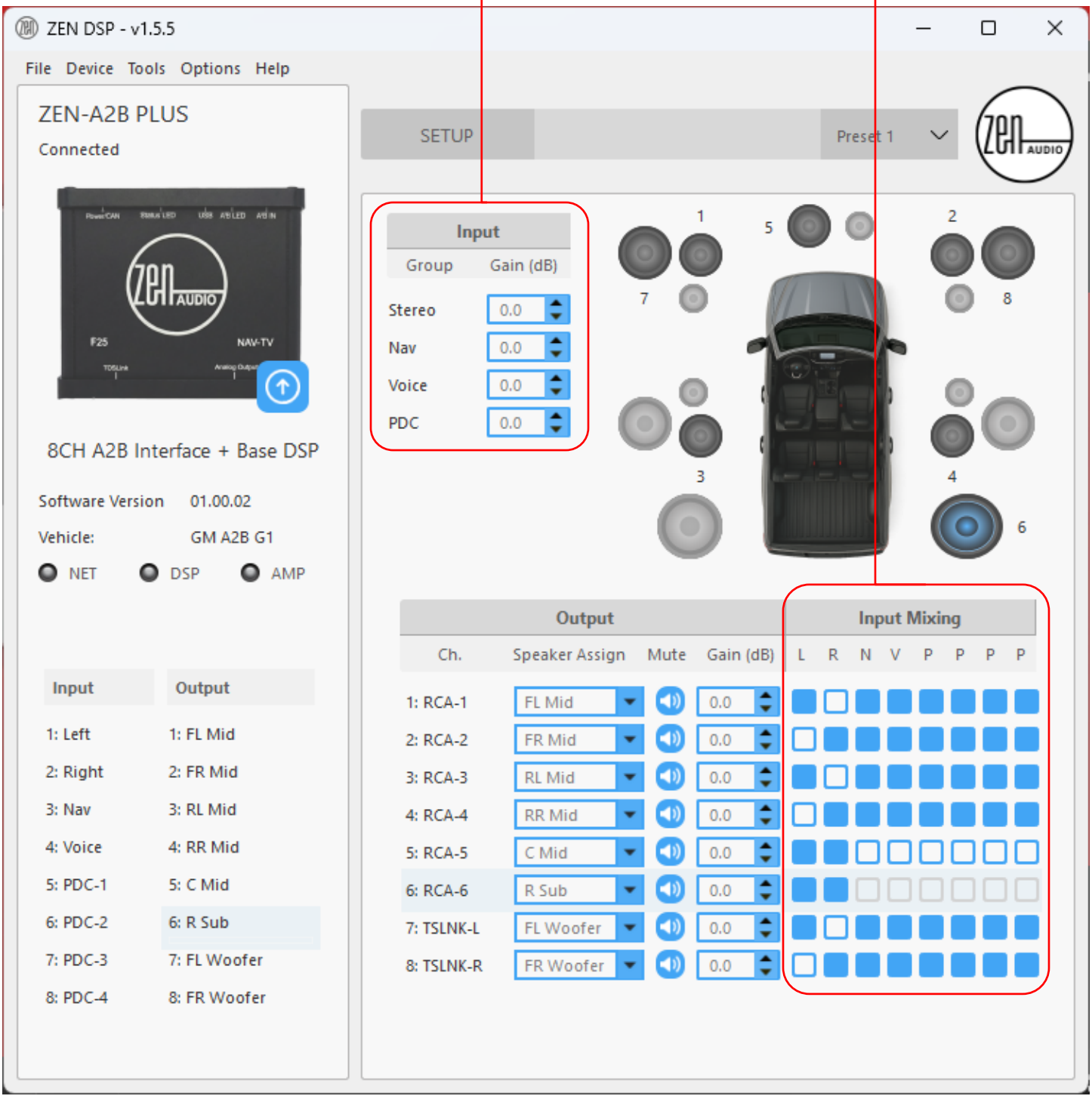
NOTES:

- *Default values for the ZEN can be recalled at any time through Device > Factory Reset menu item.*
- *You do not need to save anything after you have finished adjusting settings. All changes are synchronized automatically to the ZEN.*
- *You can save a configuration to your computer locally via the File > Save menu item.*

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Input Gain:
Vehicle inputs can be gain adjusted individually, for a minimum -12dB, and a max of 9dB.

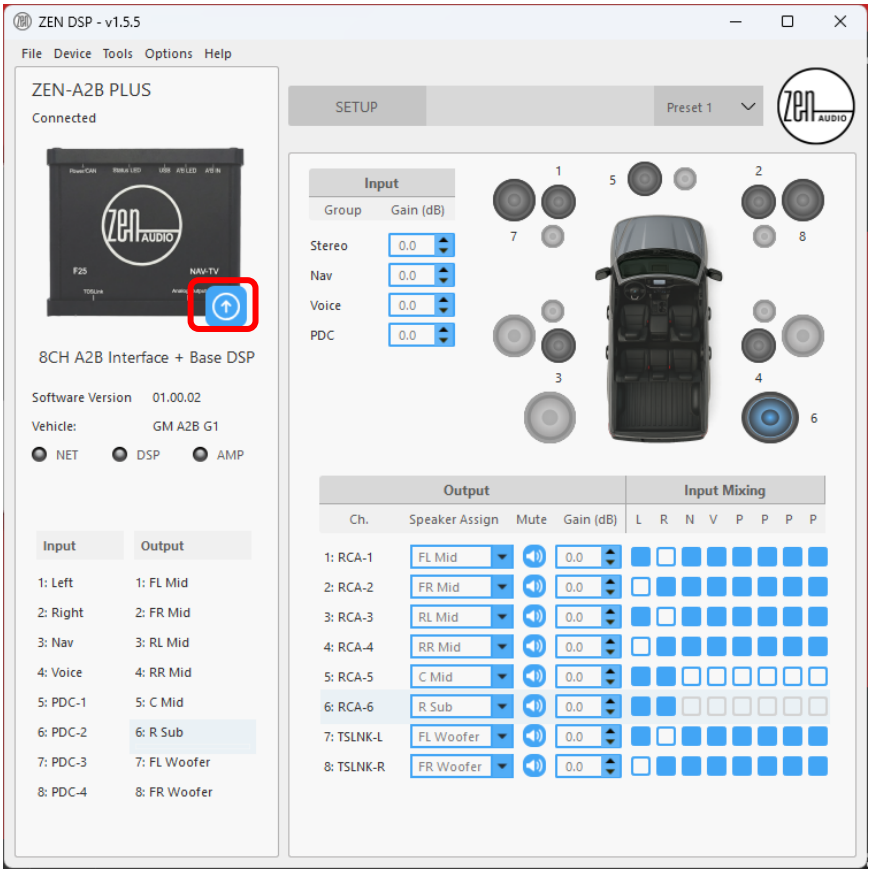
Input Mixing:
Vehicle inputs can be individually mixed into outputs in any combination.



ZEN Updates

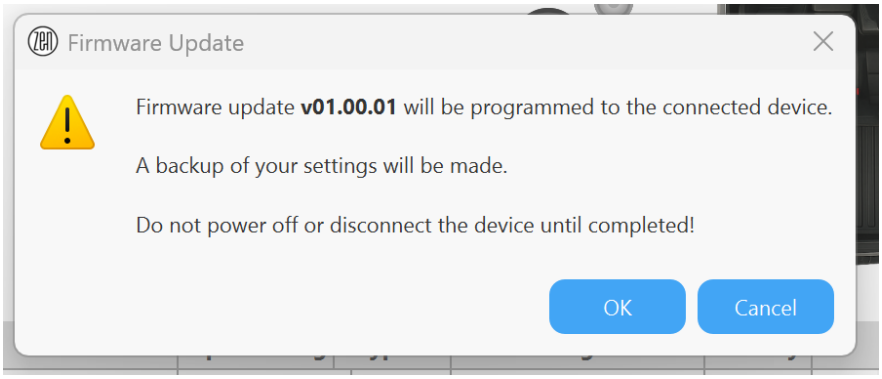
STEP 1:

Updating the ZEN A2B PLUS interface is performed using the provided USB cable and an internet-connected PC. Connect the USB cable from the ZEN module to the PC, and with an internet browser download ZEN DSP. From there simply click the update button (outlined in red).



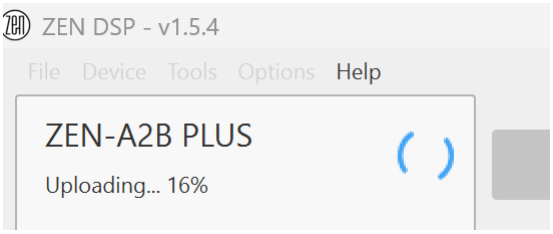
STEP 2:

Click OK on the prompt to continue update. Cancel to stop it.



STEP 3:

You can see the update progress in the top left corner. Once the unit gets to 100%, it will reboot and the update will be successfully completed.



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ZEN A2B PLUS Technical Specifications

Hardware & Software	
Current HW version:	V1.1
Current SW version:	1.01
Compatible SW (update) OS:	Windows 7 (64 bit), 8, 10, 11, macOS
INPUT	
Digital Input	A²B Twisted Pair, CAN
OUTPUT	
Digital Outputs:	TOSLINK
Digital Outputs supported:	24bit/48kHz
Frequency Response (digital):	18Hz – 24kHz
Analog Outputs:	6 channels (RCA)
Output Voltage *Peak:*	14.4
Output Voltage *RMS:*	5V
Analog Output Type:	Single-Ended
S/N Ratio max (DAC) (analog):	114dB
S/N Ratio (Digital);	134db
Frequency Response (analog):	18Hz – 24kHz
THD+N @ -1dBFS	<0.01%
DAC	48kHz 32bit
DSP	32bit Fixed Point
Delay (Time Alignment)	Selectable (Ford ACM channels only)
Power Supply	
Current Consumption Stand-by	<1 mA
Current Consumption Operational	350 mA MAX
Operational Voltage	7V – 20V DC
Amp Turn-On Output	Automatic
Amp Turn-On Voltage	V-batt
Amp Turn-On Current Limitation	500mA
Other	
Dimensions:	4”x5”x1 3/8”
Weight:	10 oz

NAV-TV
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