

Mercedes R350 Android Head Unit Upgrade

Dec 2022

The Project;

Planning to install generic cheap headunit on my 2006 R350 with minimal cost.

The challenges;

All the resources I found on the internet for similar vehicle HU upgrade was based on using headunits designed specifically for Mercedes (shape, trim, CANBUS, fibre optics). The available information for generic aftermarket headunit installation was scattered and I had to put them together to make sense and make ends meet.

I was able to successfully install generic android HU. In this document, I will go through major steps to install it. This document can serve as one source of the needed information to reference rather than try to read through all available resources.

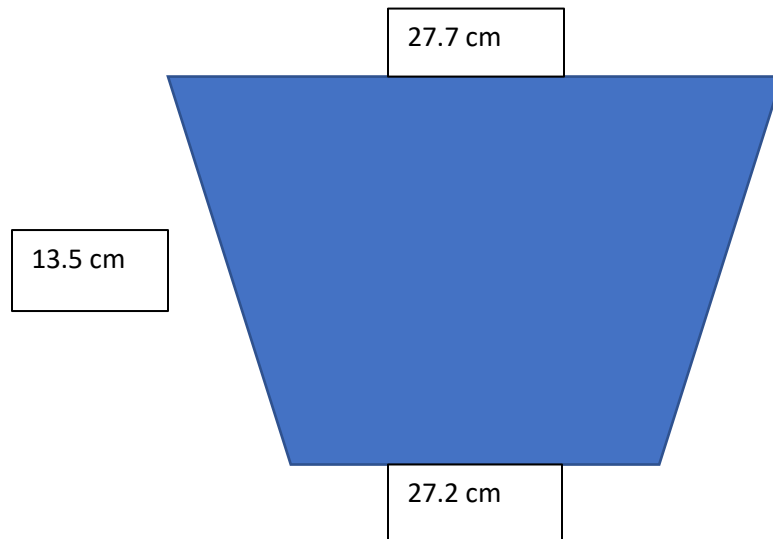
Existing Comand

The Comand installed on my vehicle is the basic one (no GPS, no Karmen Harmen, no fibre optic even if two fibre optis are already pre-installed, no backup camera). The picture below shows the wire connections in the back of the unit.



Targeted Headunit parameters

Looking for android head unit that has at least 2GB of ram. Also it should fit in the existing HU space as below sketch. The unit should also include a backup camera and Android Auto and other common features. The unit should use the latest (or close) available Android version on market (Android 11 in this case).



I ended up purchasing this headunit from Amazon which was on sale

https://www.amazon.ca/dp/B09ZK7SVWK/ref=redir_mobile_desktop?encoding=UTF8&psc=1&th=1

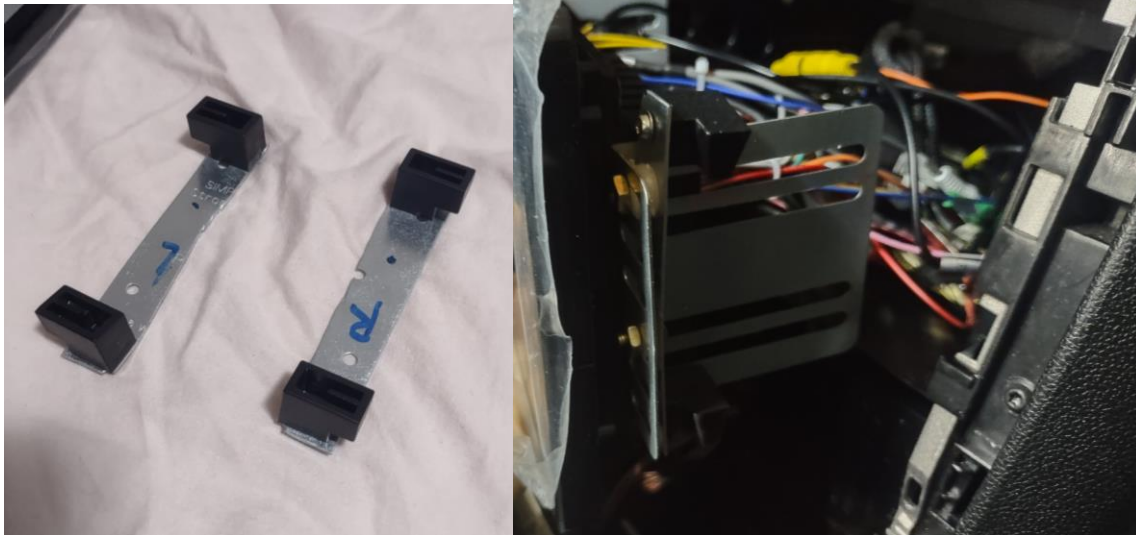
Removal of existing HU

To remove existing HU, you need to pry the climate control wood panel on the two sides where there are two clips and pull it out and upward. I did not unplug the wires. More info on the link below

<https://www.seicane.com/blog/easy-installation-guide-of-a-2006-2013-mercedes-benz-r-class-w251-radio-with-dvd-player-gps-navigation-bluetooth/>

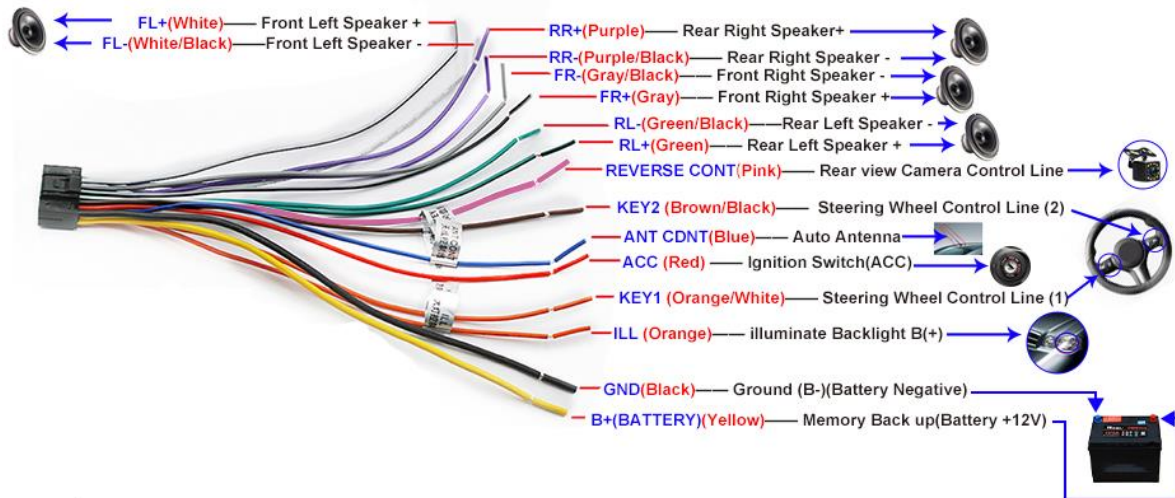
Installation of Android HU

In order to be able to mount the new HU to existing mounting location, I transferred existing mounting taps to a piece of metal sheet. I then attached the metal sheet to the new HU brackets. This metal sheet allowed me to fine tune the location on the new HU (up and down, in and out) in comparison to the available space.



Wiring Diagram/Connection

The new HU came with the following wiring harness that needs to be tapped/connected to the existing wiring.



The existing wiring diagram is as follows; some good resources are at the following links as well.

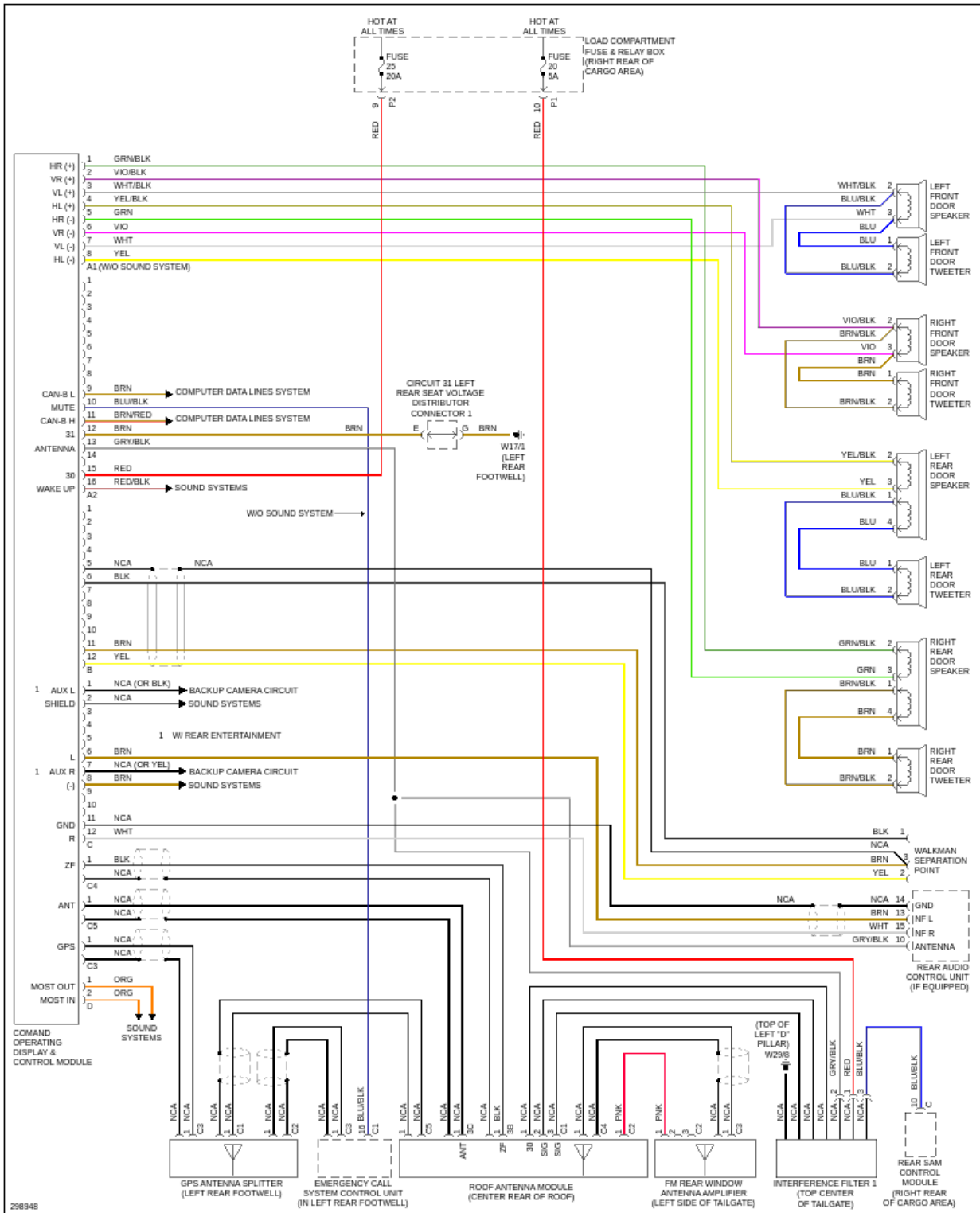
<https://portal-diagnostov.com/en/2020/05/01/radio-mercedes-benz-r350-2007-system-wiring-diagrams/>

<https://www.tehnomagazin.com/Auto-radio-car-connector/MERCEDES-Car-Radio-Wiring-Connector.htm>

Below is a table how to match existing wiring to the new wiring harness

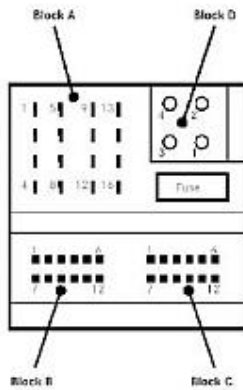
Wire Function	Existing location	Existing wire color	New harness wire color
Ground	Block A2 Pin 12	Brown	Black
+ Battery	Block A2 Pin 15	Red	Yellow
Illumination	Cigarette Lighter middle wire	Green/white	Orange
ACC	Cigarette Lighter	Black/Blue	Red
Reverse Cont	Reverse camera wiring came with new HU	Red	Pink
Ant CDNT	Can be connected to aftermarket antenna booster if installed	Not connected on this installation	Blue
FL +	Block A1 Pin 3	White/Black	White
FL -	Block A1 Pin 7	White	White/Black
FR +	Block A1 Pin 2	Violet/Black	Gray
FR -	Block A1 Pin 6	Violet	Gray/Black
RL +	Block A1 Pin 4	Yellow/Black	Green
RL -	Block A1 Pin 8	Yellow	Green/Black
RR +	Block A1 Pin 1	Green/Black	Purple
RR -	Block A1 Pin 5	Green	Purple/Black

Soldering the new wires to existing wire is not easy with a lot of wires connected to one harness (and two fibre optics) so I decided to remove Block A1 and Block B from the main HU harness. This made it easier to solder to power wires. I also decided to use pins instead of soldering wires for speakers (8 wires Block A1) and aux wires (4 wires Block B).



Pin-/terminal assignment Headunit

Plug area 1, MQS 40 (electrical) + 2-PIN MOST (optical)



Block A1, 16-PIN, coding A

PIN	Signal/Signal information
1	RR+ (AF rear right +)
2	FR+ (AF front right +)
3	FL+ (AF front left +)
4	RL+ (AF rear left +)
5	RR- (AF rear right -)
6	FR- (AF front right -)
7	FL- (AF front left -)
8	RL- (AF rear left -)

Block A2, 16-PIN, Kodierung A

PIN	Signal/Signalinfo
9	CAN_B_LOW (Innenraum-CAN (BODY-CAN))
10	N.C. (nur Audio 20: Telefon Mute)
11	CAN_B_HIGH (Innenraum-CAN (BODY-CAN))
12	Ubat - (terminal 31)
13	Cradle / Compensator on / off
14	N.C.
15	Ubat + [switched] (terminal 30*)
16	Electrical Wake Up for Media Oriented System Transport (MOST)

Block B, 12-PIN, Kodierung B

PIN	Signal/Signalinfo
1	Microphon 1 In +
2	Microphon 2 In +
3	Microphon Shield
4	Microphon out +
5	Aux 1-S (Aux-AF-Shield)
6	Aux 1-L (Aux-AF-left)
7-8	N.C.
9	Microphon Ground
10	Microphon out -
11	AUX 1-Gnd (Aux-AF-Ground)
12	AUX 1-R (Aux-AF-right)

Block C, 12-PIN, Kodierung B

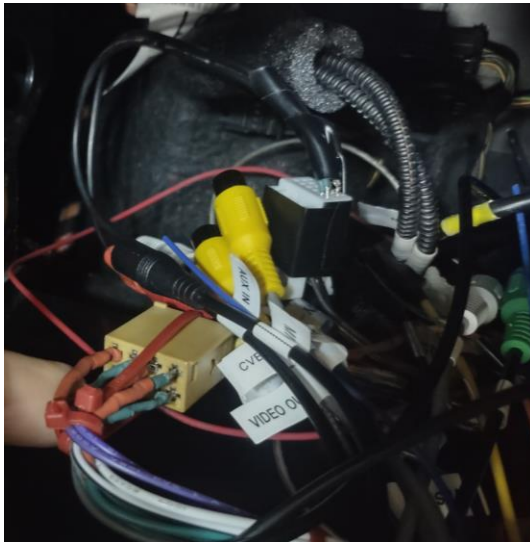
PIN	Signal/Signalinfo
1	Fan control line (external Fan)
2	Fan - (external Fan)
3-4	N.C.
5	CAN_HU_Low (Telematik-CAN (HEADUNIT-CAN))
6	CAN_HU_High (Telematik-CAN (HEADUNIT-CAN))
7	Diag-Fan (Diagnosis ext. Fan)
8	Fan + (external Fan)
9-12	N.C.

Block D, Stecker LWL

PIN	Signal/Signalinfo
1	MOST IN
2	MOST OUT
3	N.C.
4	N.C.

Standard loudspeaker system:
The impedance of the door loudspeakers front and rear is 4 Ω.

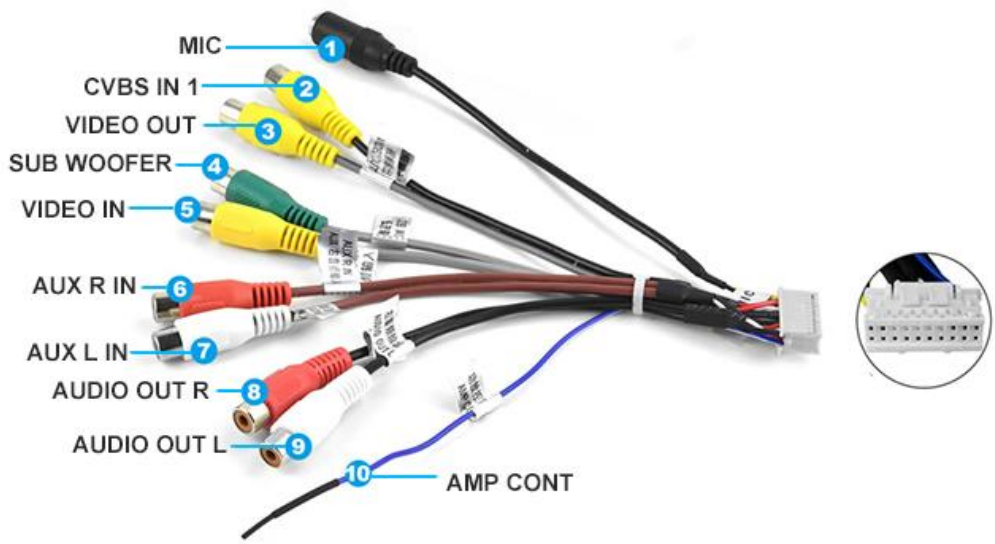
The Speakers connector/harness after the installation looks like the picture below



Other wirings;

In order to be able to use stock AUX jack in the glove box, I have connected the following wiring from the RCA cable that is provided with the Android HU as below

Wire Function	Existing location	Existing wire color	New harness wire color
Aux R in +	Block B Pin 12	White	Red Jack #6 center
Aux R in -	Block B Pin 11	NCA	Red Jack #6 outer
Aug L in +	Block B Pin 6	Brown	White Jack #7 center
Aux L in -	Block B Pin 5	NCA	White Jack #7 outer



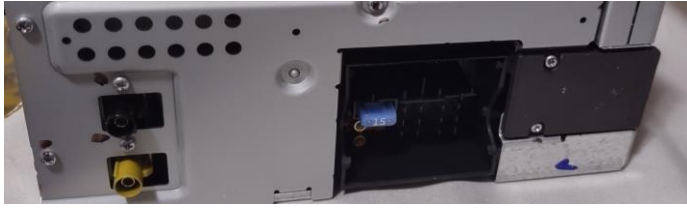
AUX connector looks like the picture below



Radio Antenna;

My stock HU takes one Fakra port connection. I was not quite certain which adapter to use as my search came with mixing results and that FM performance will suffer anyway.

Good resource is at this link https://youtu.be/er_VzDLAEQc



On my unit; Black Fakra is for FM antenna and yellow Fakra is diversity antenna or voice command (different resources). I am not sure about it but this is what I got from the internet.

The Fakra connectors that might be suitable for my upgrade are similar to the following;



However, there was some negative feedback that even with these connectors the FM reception will suffer. Because of this I decided to go with aftermarket Antenna like the following which I mounted behind the rearview mirror;



I tried it without additional signal booster and seems to be working well for me. Additional booster can be installed if needed like this one.



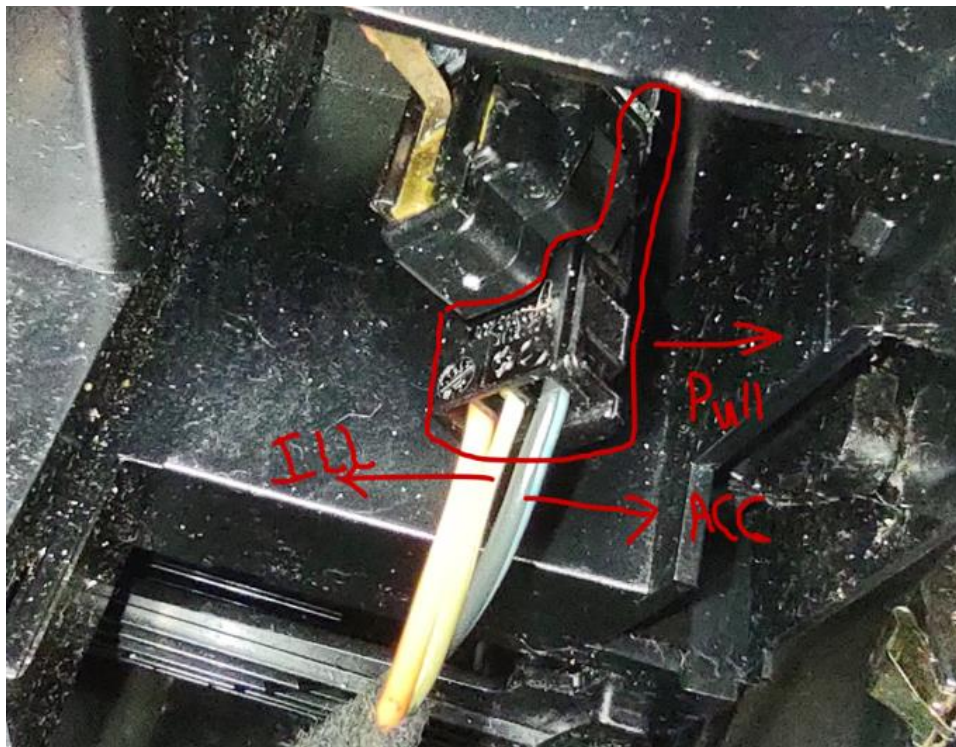
Cigarette Lighter wiring access

To access these wires to tap Illumination and ACC wires, you need to remove center console as per the links below

<https://mbworld.org/forums/r-class-w251/259553-headrest-dvd-system-installation.html>

<https://forums.mercedesclub.org.uk/index.php?threads/r-class-centre-console-removal.186941/>

Below is a picture of the cigarette lighter harness from down upward. You need to pull/push the connector to the right to disconnect it to give you some space to solder wires to this connector.



Rear Camera Installation

I am not going to cover how to install the reverse camera in this document but as a hint you will need to install a relay to switch a stable power source on to the camera. Reverse camera light can be used to trigger the relay to provide power to reverse camera. Reverse light can't be used as power source for the camera as it fluctuates to test for burned bulbs with CANBUS system.

Final Cosmetic Touchups

The open space on the sides of the installed 9in HU needs to be covered. I cut out two pieces of plexiglass sheets to size and wrapped them with carbon fibre vinyl wrap and mounted in place as per the pictures below





Final Thoughts

- It would be easier if there is any aftermarket wiring harness to use without CANBUS module rather than soldering or pinning wires Standard harness
- Cost of Unit is about \$150 CAN on sale which is less than half of a comparable unit (about \$360 CAN) specifically made for the R class. The only additional items I can see is the wiring harness with CANBUS module and surrounding trim. This can't justify the cost difference to me. This approach is a good alternative to aging vehicle like mine (2006) that I don't want to invest a lot in it.

Useful resources

<https://mbworld.org/forums/r-class-w251/695887-r350-aftermarket-radio.html>

<https://android-headunits.com/what-is-the-can-bus-box-with-an-android-head-unit/>