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2GFusions > Technical > Interior & Electrical

Variable Line Level Preamp Outputs From ACM (Factory Radio) For Amplifier Upgrades

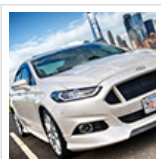


Pages (9): 1 2 3 4 5 ... 9 Next »

Thread Rating:

Variable Line Level Preamp Outputs From ACM (Factory Radio) For Amplifier Upgrades

Thread Modes



DanMc85

The Source / Moderator



Posts: 2,223
 Threads: 32
 Joined: Oct 2014
 Reputation: **167**
 Location: New England - USA
 Year: 2014
 Trim: Titanium
 Color: White Platinum
 Engine: 2.0T
 Layout: AWD

03-20-2016, 06:49 PM (This post was last modified: 01-28-2017, 10:03 PM by DanMc85.)

#1

It is possible to reprogram the ACM to send out a flat line level out (approx 4 Volt preamp out) for sound out of the existing speaker wiring instead of regular high levels that are sound processed by the factory radio and/or Sony DSP (if equipped). This makes using an aftermarket Amp way easier as it will have the pure unmodified sound as if using regular RCA Pre-Amp Outs. Also makes for better audio tuning as the bass won't be cut off as the volume goes up on the stock configuration. This mod works on all Fusion ACM's, with or without MyFord Touch / Sony. Also allows for removal / disconnection of the Sony Amplifier in the back of the trunk.

This mod can be done with **FORScan w/ODBLink MX Adapter:**

727-01-01 xx**59 F8x8** xxxx - Enables Line Level with Optional Subwoofer (Aux 1) and Front Center (Aux 2) Outputs Enabled*

727-01-02 **00xx** - Disables Factory EQ Processing (ACM As-Built)

*** This string breaks down as follows:**

- 5 = Variable Line Level Audio Output
- 9 = Enable External Subwoofer (AUX 1) and Internal Amplifier (Aux 2) (0 - Disable)
- F = Disable Open Speaker Circuit Detection (w/Active FM Radio Antenna - Otherwise use a D)
- 8 = Front Tweeters Present
- 8 = Aux 1 Type: Mono Subwoofer and Aux 2 Type: Front Center

7D0-01-01 **2xxx xxxx xxxx**

(APIM As-Built) - APIM change required only if you have Sony DSP before completing this mod.

FORScan How-To Guide: [Click Here](#)

***If this line level modification wiring guide was useful to you... feel free to leave a monetary tip via PayPal:
<https://www.paypal.com/cgi-bin/webscr?cm...3M28XAALVJ>***

Note: *This guide may not be applicable to 2017 Fusions... as Ford has changed the ACM style and most of the coding that was previously used in 2013-2016 Fusions. Someone would need to test to confirm if it works or not.*

THIS MOD SHOULD WORK ON *MOST* NEWER FORD VEHICLES MADE AFTER 2013...

If coming from the Sony amp you will need to add two wires to the ACM Harness (Pins 8, 21) and tap into the APIM Harness to connect those wires to the existing wires coming out of (Pins 3,4) respectively. This is not a requirement, but if these wires are not added then you will not have any Voice Navigation or Voice Command Prompts. These two wires are to hear the Female Sync Voice which were previously sent down to the Sony Amp. Ford Part Number: DU2Z-14474-CA
- Vehicles without the Sony amp (other than hybrid/energi) should already have these wires in place so this extra wiring step is not necessary.

- Regular Trim ACM's tap the now low level speaker wiring behind the radio by cutting the ends off one side of a long 4-channel RCA cable which will be run to your amps in the rear of the vehicle.

Connector C240A

Front Left: White (+), White/Brown (-) (ACM: 22, 10)

Front Right: White/Violet (+), White/Orange (-) (ACM: 23, 11)

Rear Left: White/Green (+), Brown/Yellow (-) (ACM: 21, 9)

Rear Right: Brown/White (+), Brown/Blue (-) (ACM: 24, 12)

Connector C240B

Subwoofer: Violet/Green(+), Green/White (-) (ACM: 4, 17)

Amp Remote Turn On: ACM (Harness B) - Violet/Red (Pin 18) **OR** ACM (Harness A) - Brown (Pin 7)

Note these remote turn on wires are NOT 12 volts (approx 6 volts)... some amplifiers may require a 12 volt remote input and may need to convert this output with a third party device or relay. While you have the dash apart, you could also tap the accessory power wire at the key ignition harness for a guaranteed 12 volt wire for remote turn on. Also some sound processors, such as the JBL MS-8, support 4 Volts and higher as a remote turn on voltage so this is not an issue if you are using one.

UPDATE:

Better remote turn on wire option for Push to Start Vehicles:

Connector C3501 - Pin 5 - Brown/Yellow (22 Gauge) - 12 Volt w/ Delayed Accessory Feature

- This wire is going into the 150 Watt AC/DC Power Inverter

The center speaker, if equipped, doesn't get a 4-Channel RCA run to the rear. But if you are tapping the center to the speaker output on your Amp. Cut this wire and connect it to the speaker output for a 5.1 Setup. Will most likely need to use a sound processor to get a center channel output. I haven't tested if the ACM outputs a low level center as well. You are welcome to meter the wire with an oscilloscope and check...

Center (Optional): Green (+), Gray/Yellow (-) (ACM: 20, 8)

- If you have a Sony DSP Amp that is no longer being used after this mod, tap these wires at the rear to make life easier. As you don't have to run a 4-channel RCA cable down the side of the car. The wire colors are different as they change via another harness connection on the way to the rear of the vehicle.

These are on the Sony DSP Harness (Twisted Pair CAT5, should be easy to spot):

Front Left: Yellow (+), Blue (-) (Sony DSP: 7, 17)

Front Right: Violet (+), Brown/Yellow (-) (Sony DSP: 9, 19)

Rear Left: Orange (+), White (-) (Sony DSP: 2, 12)

Rear Right: Green (+), Gray (-) (Sony DSP: 4, 14)

Amp Remote Turn On: Red (Sony DSP - Pin 3)

Note: this remote turn on wire is NOT 12 volts (approx 6 volts)... some amplifiers may require a 12 volt input and may need to convert this output with a third party device. Some sound processors, such as the JBL MS-8, support 4 Volts and

higher as a remote turn on voltage so this is not an issue.

UPDATE:

Better remote turn on wire for Push to Start Vehicles:

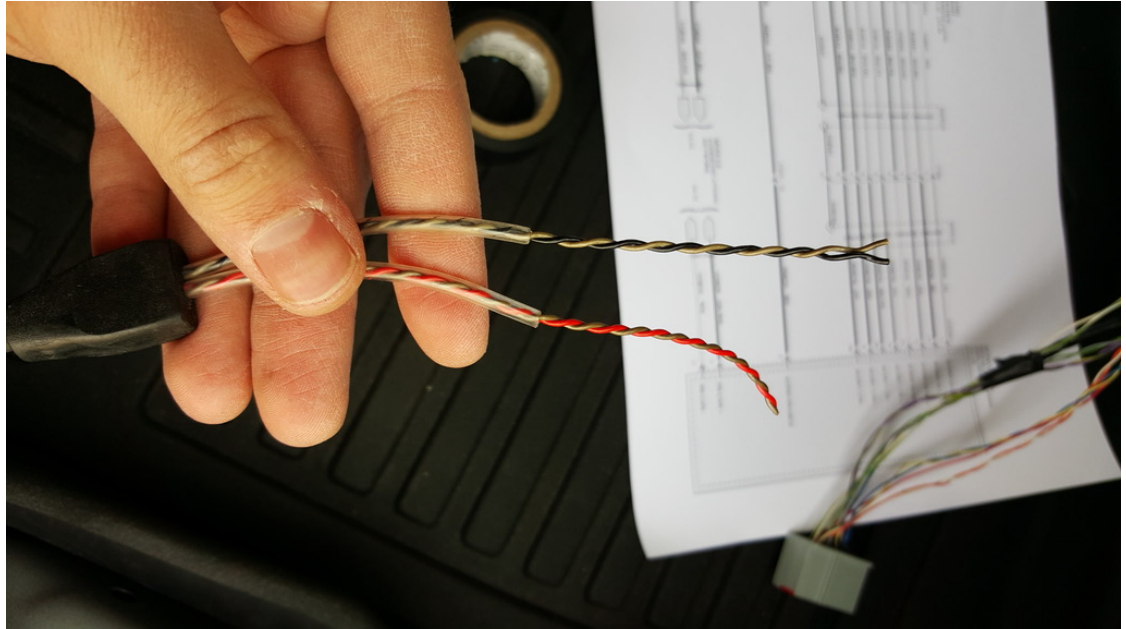
Connector C3501 - Pin 5 - Brown/Yellow (22 Gauge) - 12 Volt w/ Delayed Accessory Feature

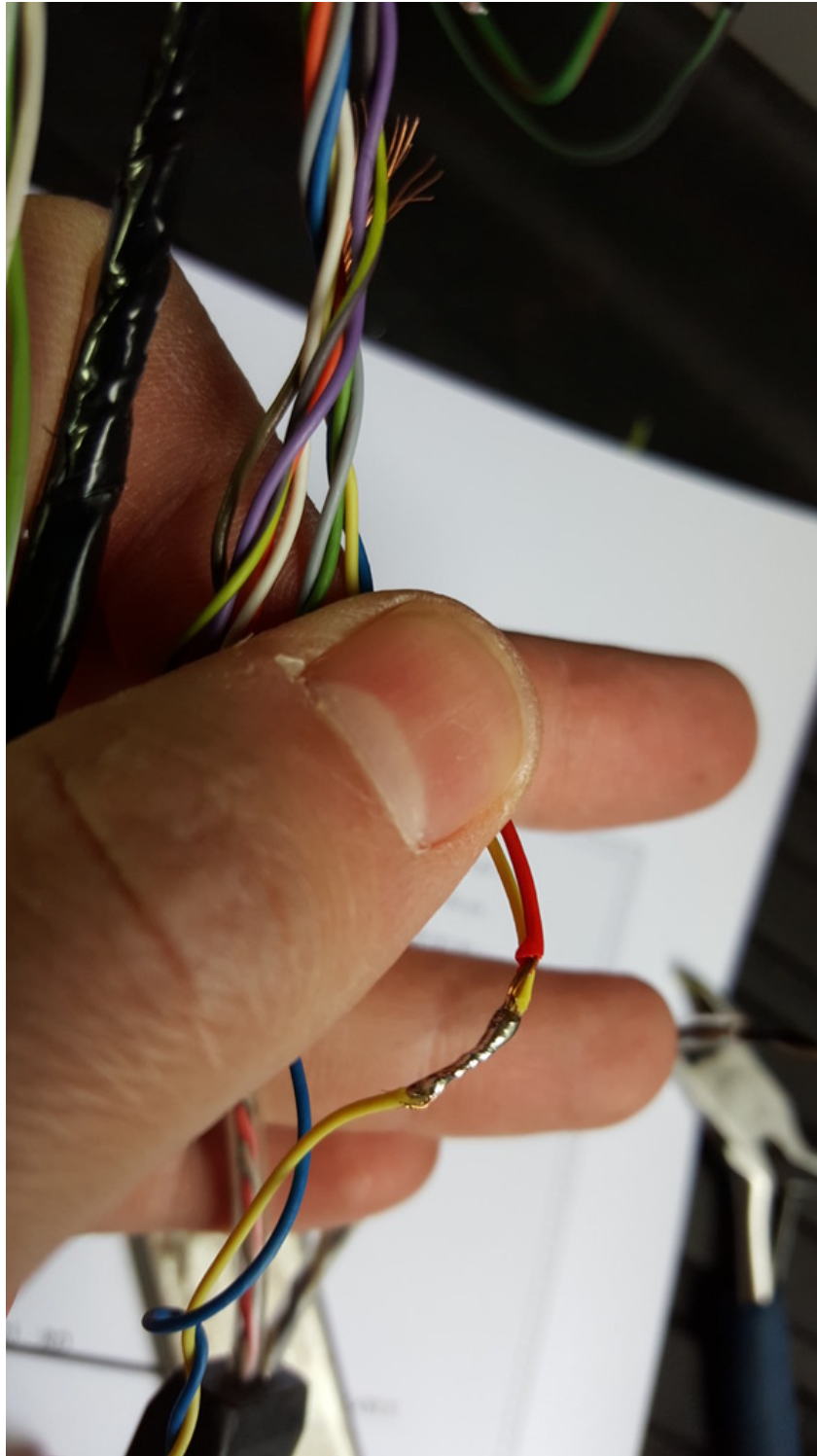
- This wire is going into the 150 Watt AC/DC Power Inverter

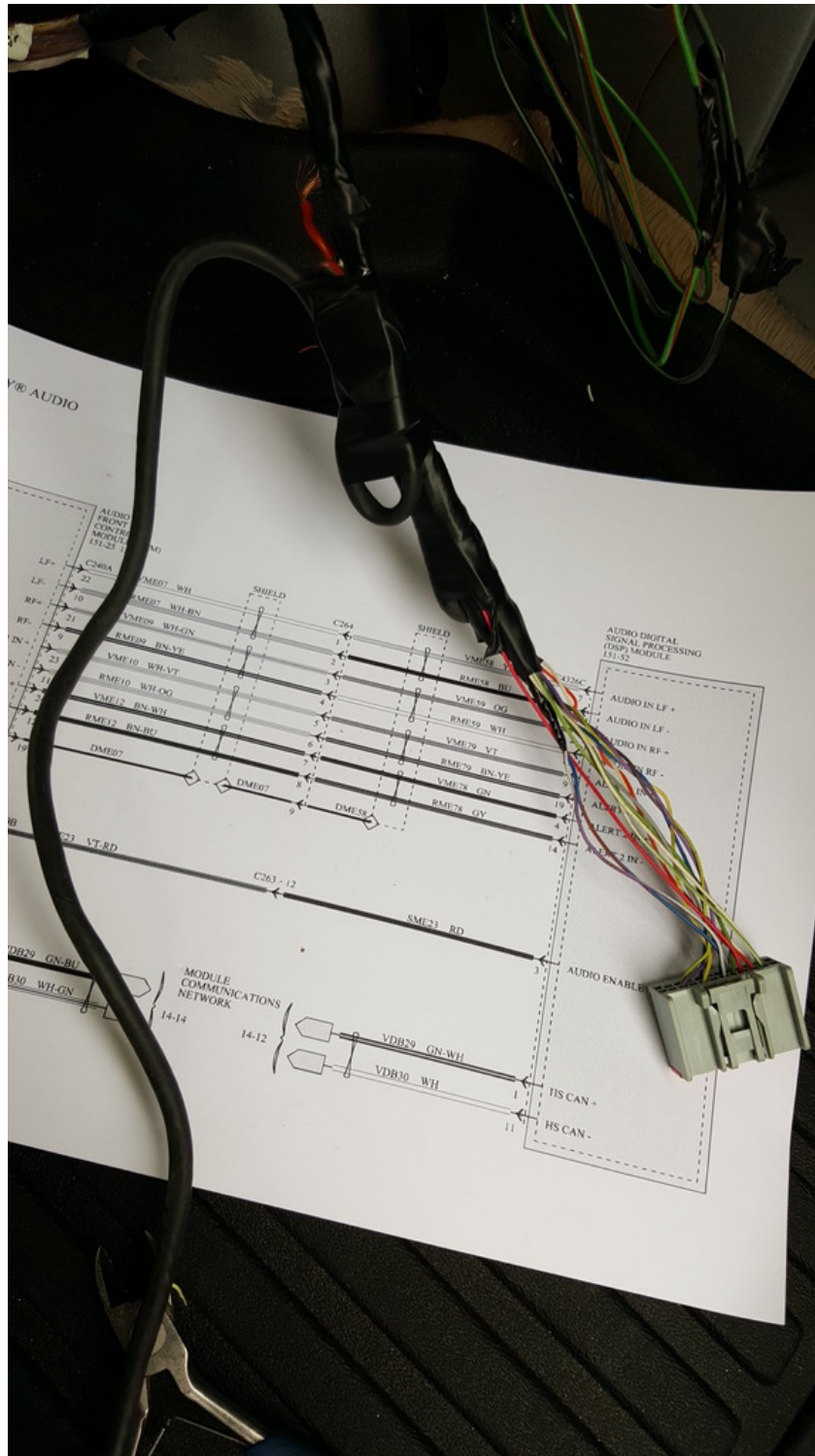
These wire colors are only accurate after doing this line level mod shown on the Sony DSP. Normally the DSP doesn't use rear inputs and swaps a few wiring groups around. You will notice they don't match the Sony wiring sheet below and this is why.

If you are using a JBL MS-8, or similar sound processor, I recommend using all four channels as an input and not just the front two channels. Otherwise you will lose your reverse tones as your car approaches an object backing up as they are sent to the rear speakers.

The easiest way to tap the wiring is to cut the ends off one side of a RCA cable and connect it directly to the, now low level, outputs. Then run the RCA cable down the side of the vehicle to the RCA inputs on your amplifier. You would no longer want that wiring to go directly to each individual speaker as the sound would need to be amped first (which I am assuming you have already done if you added a 4-channel amp using a LOC unless you are planning to add a 4-channel amp to your upgraded speakers). You would need a 4-Channel RCA cable for a regular amp to speaker setup. For a sub input you could tap the rear left speaker twice or some amps have a pass-through/audio out which you could just run a short RCA cable to your subwoofer amp and set the crossovers accordingly.

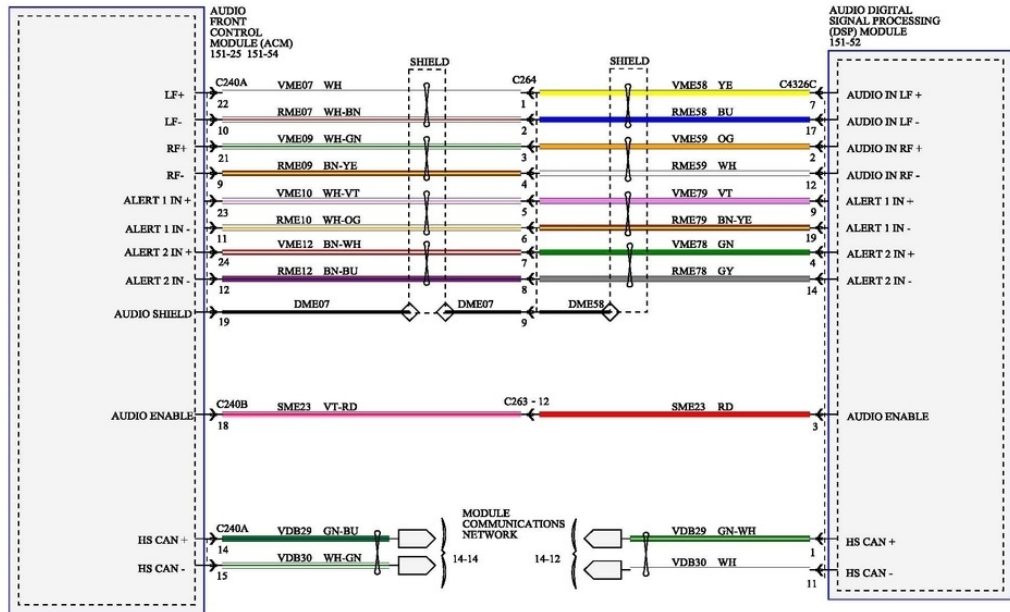






The Audio enable wire is the Remote Turn On Wire for your amplifier, which needs to have a variable input. Most amps will accept a 4-12Volt remote turn on wire, I measured my wire and it was around 6 volts.

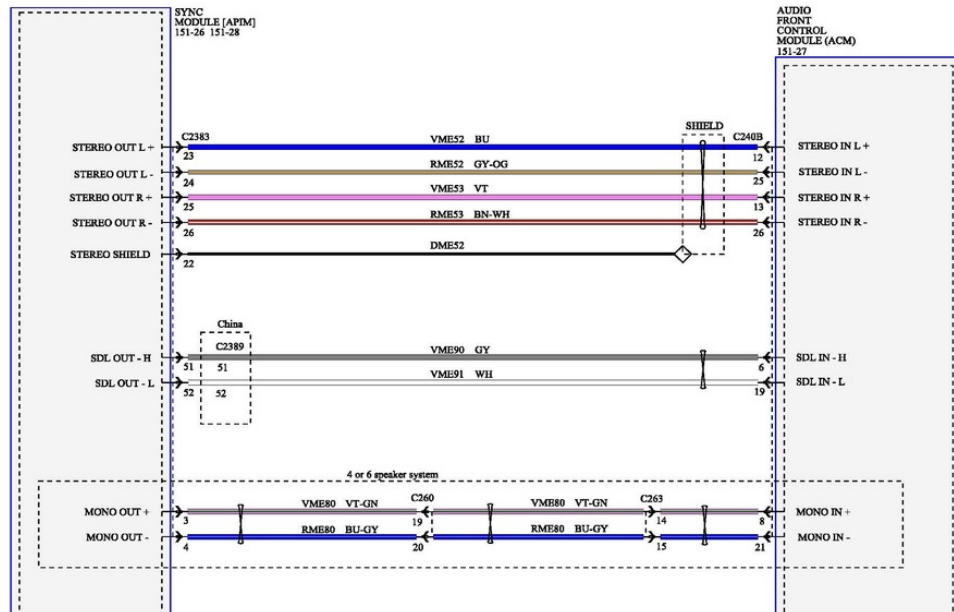
SONY® AUDIO



After doing this mod, some of the colors don't match up according to the wiring diagram if you tap them at the Sony Amp. For example, after this mod. This sheet lists pins 11, 23 as Alert 1 In, but if you check a non-sony ACM diagram. Pins 11, 23 really are the Front Right Speaker. So just an FYI.

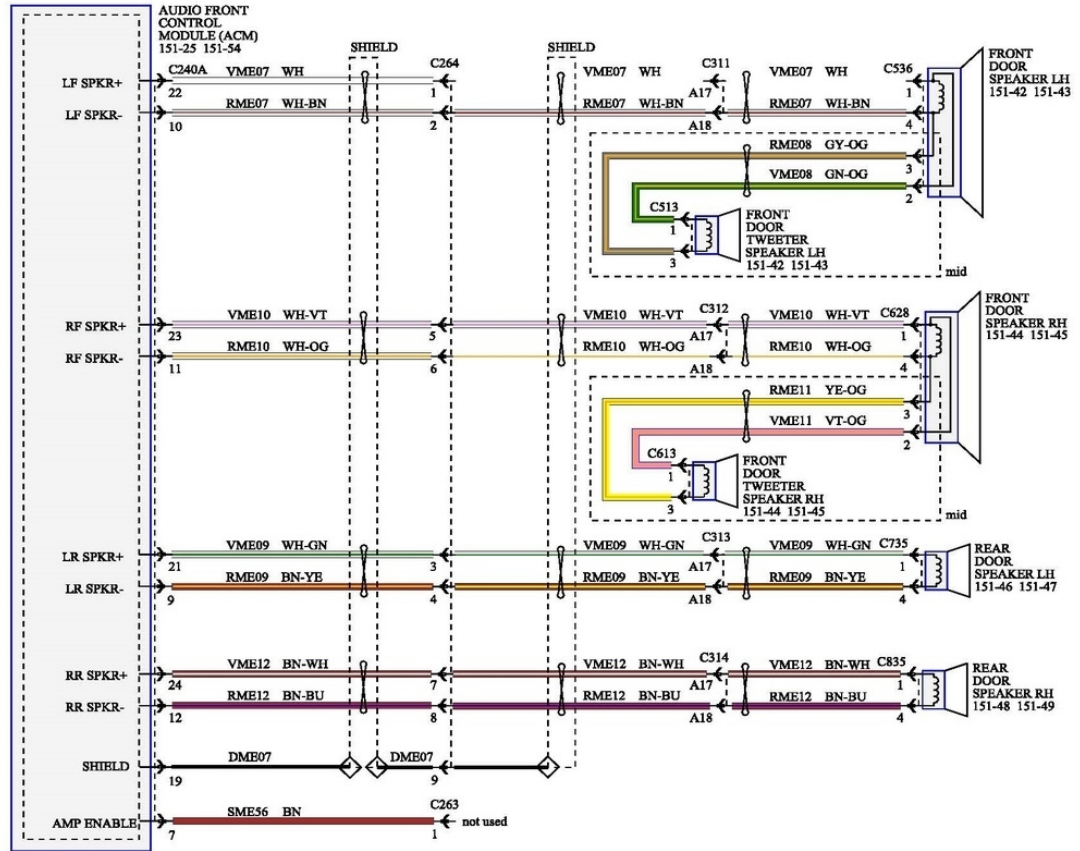
Page 1 of 1

FUSION

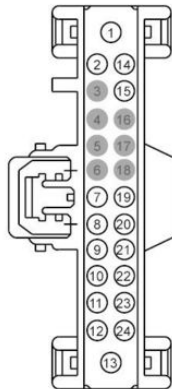


http://www.fordtechservice.dealerconnection.com/renderers/ie/wiring/svg/ep_diagram_c3p_print_svg.asp?lav... 2/19/2015

BASE/MID - FUSION



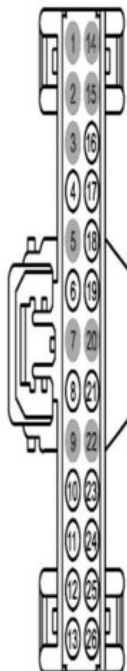
Connector:	Description	Color	Harness	Base Part #	Service Pigtail
C240A	AUDIO FRONT CONTROL MODULE (ACM)		14401	18806	See Below



Terminal Part Number	Service Part Number
97BG-14474-BBA	DU2Z-14474-EA
SUST-14474-CA	DU2Z-14474-CA
SUST-14474-BA	DU2Z-14474-CA

Pin	Circuit	Gauge	Circuit Function	Qualifier	Terminal Part Number
1	CBP33 (WH-BN)	18	FUSE - 33 OR CIRCUIT BREAKER		97BG-14474-BBA
2	CME36 (GN-VT)	18	CTRL MOD - AUDIO # AMPLIFIER ANTENNA REAR WINDOW		SUST-14474-CA
3	-	-	Not Used		N/A
4	-	-	Not Used		N/A
5	-	-	Not Used		N/A
6	-	-	Not Used		N/A
7	SME56 (BN)	22	CTRL MOD - AUDIO # SUBWOOFER 2ND ENABLE		SUST-14474-BA
8	RME08 (GN-VT)	22	CTRL MOD - AUDIO # SPEAKER CENTER FRONT (P)		N/A
9	RME09 (BN-YE)	18	CTRL MOD - AUDIO # SPEAKER LEFT REAR (WOOFER) -		SUST-14474-CA
10	RME07 (WH-BN)	18	CTRL MOD - AUDIO # SPEAKER LEFT FRONT DOOR (WOOFER) -		SUST-14474-CA
11	RME10 (WH-OG)	18	CTRL MOD - AUDIO # SPEAKER RIGHT FRONT DOOR (WOOFER) -		SUST-14474-CA
12	RME12 (BN-BU)	18	CTRL MOD - AUDIO # SPEAKER RIGHT REAR (WOOFER) -		SUST-14474-CA
13	GD219 (BN-GY)	18	GROUND - INSTRUMENT PANEL STRUCTURE # 2ND POINT		97BG-14474-BBA
14	VDR29 (WH-GN)	22	CONNECTOR - DIAGNOSTIC # CAN BUS HIGH SPEED 3 (LOWER) HIGH		SUST-14474-BA
15	VDR30 (WH-GN)	22	CONNECTOR - DIAGNOSTIC # CAN BUS HIGH SPEED 3 (LOWER) LOW		SUST-14474-BA
16	-	-	Not Used		N/A
17	-	-	Not Used		N/A
18	-	-	Not Used		N/A
19	DME07 (*)	20	CTRL MOD - AUDIO # FRONT		SUST-14474-BA
20	VME08 (GN)	22	CTRL MOD - AUDIO # SPEAKER CENTER FRONT (P) +		N/A
21	VME09 (WH-OG)	18	CTRL MOD - AUDIO # SPEAKER LEFT REAR (WOOFER) +		SUST-14474-CA
22	VME07 (WH)	18	CTRL MOD - AUDIO # SPEAKER LEFT FRONT DOOR (WOOFER) +		SUST-14474-CA
23	VME10 (WH-VT)	18	CTRL MOD - AUDIO # SPEAKER RIGHT FRONT DOOR (WOOFER) +		SUST-14474-CA
24	VME12 (BN-WH)	18	CTRL MOD - AUDIO # SPEAKER RIGHT REAR (WOOFER) +		SUST-14474-CA

Connector: C240B	Description AUDIO FRONT CONTROL MODULE (ACM)	Color	Harness 14401	Base Part # 18806	Service Pigtail Not Available



Terminal Part Number Service Part Number

9U5T-14474-XA DU2Z-14474-CA
8U5T-14474-BA DU2Z-14474-CA

Pin	Circuit	Gauge	Circuit Function	Qualifier	Terminal Part Number
1	*	*	Not Used		N/A
2	*	*	Not Used		N/A
3	*	*	Not Used		N/A
4	VME22 (VT-GN)	22	CTRL MOD - AUDIO # SUBWOOFER/AMPLIFIER AUDIO +		N/A
5	*	*	Not Used		N/A
6	VME90 (GY)	26	CTRL MOD - SATELLITE DIGITAL RADIO DATA LINK (+) (SDL-H)		9U5T-14474-XA
7	*	*	Not Used		N/A
8	VME80 (VT-GN)	22	CTRL MOD - MULTIMEDIA GATEWAY MODULE # ALERT 1 (+)		8U5T-14474-BA
9	*	*	Not Used		N/A
10	VMEA9 (BU-GY)	20	CTRL MOD - REMOTE CD # AUDIO LEFT +		N/A
11	VMEB0 (GN-WH)	20	CTRL MOD - REMOTE CD # AUDIO RIGHT +		N/A
12	VME52 (BU)	22	CTRL MOD - BLUETOOTH/MULTIMEDIA GATEWAY MODULE # AUDIO [SATELLITE DIGITAL RADIO] LEFT +		8U5T-14474-BA
13	VME53 (VT-GN)	22	CTRL MOD - BLUETOOTH/MULTIMEDIA GATEWAY MODULE # AUDIO [SATELLITE DIGITAL RADIO] RIGHT +		8U5T-14474-BA
14	*	*	Not Used		N/A
15	*	*	Not Used		N/A
16	DME22 (*)	20	CTRL MOD - AUDIO # SUBWOOFER/AMPLIFIER AUDIO D		N/A
17	RME22 (GN-WH)	22	CTRL MOD - AUDIO # SUBWOOFER/AMPLIFIER AUDIO -		N/A
18	SME23 (VT-RD)	22	CTRL MOD - AUDIO # SUBWOOFER/AMPLIFIER ENABLE		8U5T-14474-BA
19	VME91 (WH)	26	CTRL MOD - SATELLITE DIGITAL RADIO DATA LINK (-) (SDL-L)		9U5T-14474-XA
20	*	*	Not Used		N/A
21	RME80 (BU-GY)	22	CTRL MOD - MULTIMEDIA GATEWAY MODULE # ALERT 1 (-)		8U5T-14474-BA
22	*	*	Not Used		N/A
23	RMEA9 (VT-BN)	20	CTRL MOD - REMOTE CD # AUDIO LEFT -		N/A
24	RMEB0	20	CTRL MOD - REMOTE CD		N/A

For Vehicles With Factory Sony DSP/Amplifier Only:

Needed Wiring Terminal Inserts: Order from FordParts.com, local dealer, etc...
Part Number: DU2Z-14474-CA

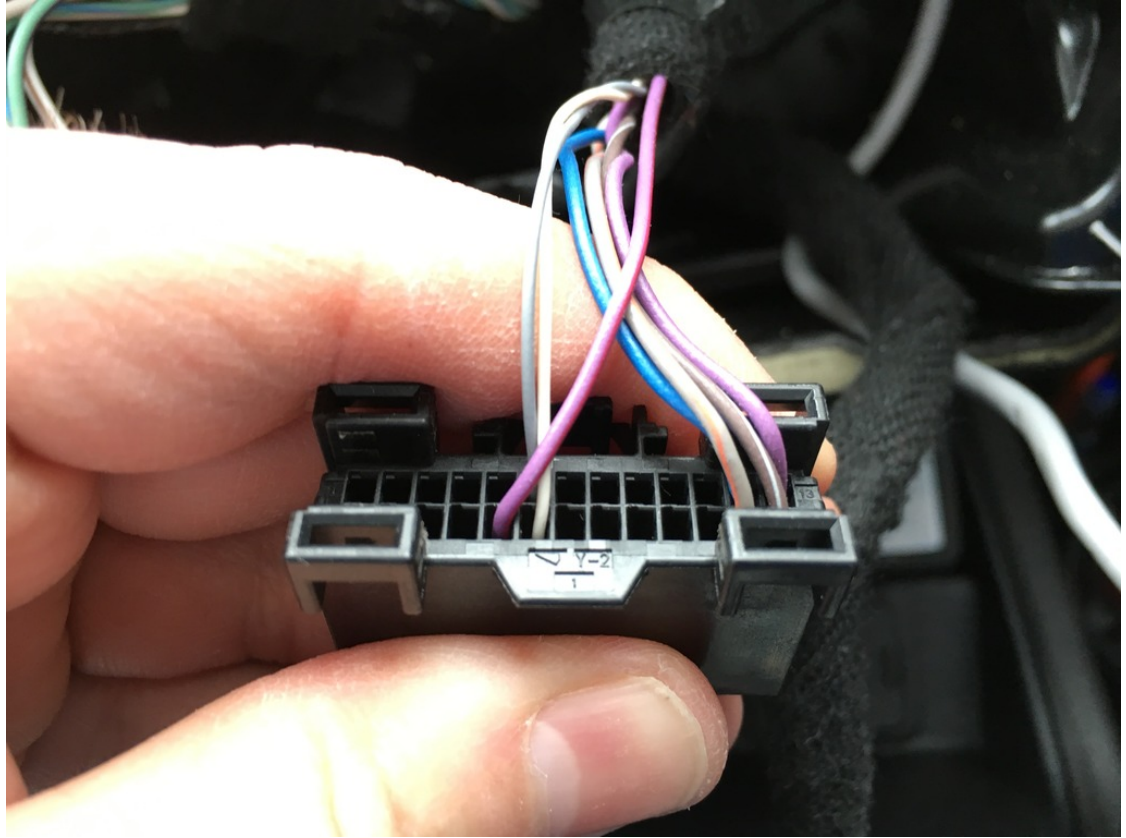
I added and soldered two wires to the ACM and APIM Harnesses... These two mono out wires are required if you are disconnecting the Sony Amplifier, previously in use, to use your own amplifiers to the speakers/subwoofer without a Line Output Converter. These two wires reroute the Sync Voice from the APIM, back into the ACM, and out your aftermarket speakers.

Without adding these two wires, there will be no voice on navigation directions and voice commands will not have any feedback to confirm prompts.

It is accomplished by adding two wire terminals to the ACM Harness (Pins 8,21) and soldering them to the Sync wires on

the APIM Harness (Pins 3,4).

ACM Harness (Before Modification):



Additional Wire Terminals Inserted Into ACM Harness (Pins 8,21):



Other End of Wiring Terminal Connected to APIM Harness (Pins 3,4):
... MUST BE SOLDERED BEFORE TAPING WIRE UP...



APIM Harness Wiring Taped Back Up:



If anyone is ordering a separate ACM's, high end with HD Radio and Sirius Satellite Radio, to use a spare ACM for this mod and keep original intact or wants to upgrade to HD Radio at the same time. Search for one of these part numbers...

Fusion ACM Part Numbers:

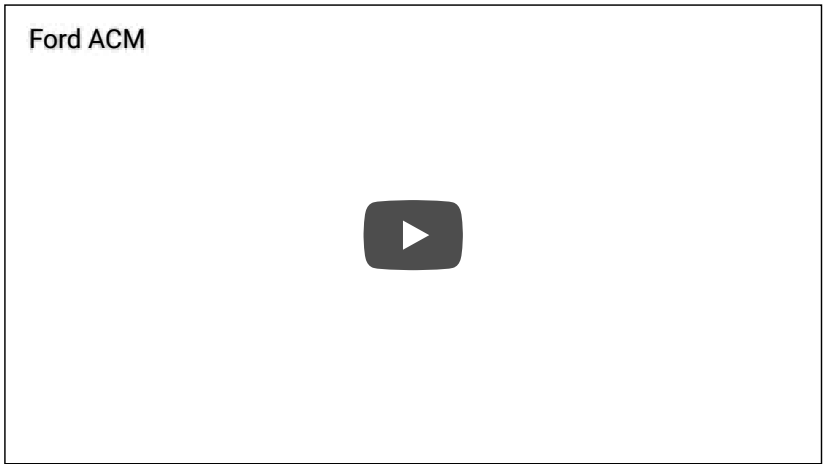
DS7T-19C107-CM (2013/2014)

FS7T-19C107-CB (2015/2016)

HS7T-19C107-AC (2017)

Side note: Changing your physical ACM will change your Sirius Radio ESN. You will have to call Sirius if you have a paid subscription to give them the new radio serial number or it won't work.

Videos by Jesse (OEM_Radio):



Prototype Harness:



Reply



DigitalDesignsFa

n

Senior Member



Posts: 332
 Threads: 14
 Joined: Oct 2015
 Reputation: **6**

03-21-2016, 12:05 PM

#2

That's nice and all but you still need a way to tune it afterwards. If you care that much just get a DSP from the start.

Reply



DanMc85

The Source / Moderator



03-21-2016, 12:07 PM (This post was last modified: 03-21-2016, 01:17 PM by DanMc85.)

#3

DigitalDesignsFan Wrote:

(03-21-2016, 12:05 PM)

That's nice and all but you still need a way to tune it afterwards. If you care that much just get a DSP from the start.

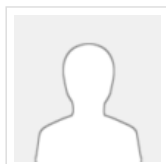
If desired, I agree and I still use my JBL MS-8. Biggest benefit to this mod is as the volume goes up there is no frequency cut off or bass drop out to compensate for which equates to better and less modified sound.



Posts: 2,223
Threads: 32
Joined: Oct 2014
Reputation: **167**
Location: New England - USA
Year: 2014
Trim: Titanium
Color: White Platinum
Engine: 2.0T
Layout: AWD

Sent from my iPhone using Tapatalk

Reply



OEM_Radio Member
★★

Posts: 63
Threads: 0
Joined: Mar 2016
Reputation: **9**

03-21-2016, 12:55 PM

#4

Right.. thanks.. the main benefit is just what Dan stated. Ford employs frequency roll offs to prevent component damage and people constantly blowing speakers.. so as the volume increases the more drastic the processing kicks in.. and that really affects the sound if you are going aftermarket. The tuning while nice isn't as necessary due to having a flat signal out from the start. It is essentially as if you put an aftermarket headhunt in.. You also can go straight to the ACM rather than after the sony AMP.. because we change from a solid non varied output to a nice low level variable output .

The processing is nice if you really y want the time alignment and have an RTA to really dial in the car.. but for a majority the money to adjust the out put of the factory radio is much less expensive than a processor just to get a usable output.

Reply



DigitalDesignsFan Senior Member
★★★★★

Posts: 332
Threads: 14
Joined: Oct 2015
Reputation: **6**

03-21-2016, 01:36 PM

#5

Yes with this car you do have to set the master volume and use the DSPs remote volume. It's not terrible noticeable after the MS-8 has done its corrections but other DE-EQs will still shift

Reply



OEM_Radio Member
★★

Posts: 63
Threads: 0
Joined: Mar 2016
Reputation: **9**

03-21-2016, 04:39 PM

#6

DigitalDesignsFan Wrote:

(03-21-2016, 01:36 PM)

Yes with this car you do have to set the master volume and use the DSPs remote volume. It's not terrible noticeable after the MS-8 has done its corrections but other DE-EQs will still shift

Yeah.. but thats the best part about the changes I make.. you don't have to use the DSPs remote because there is no more processing.. and the volume becomes variable rather than solid..

Reply

03-21-2016, 11:00 PM

#7



DanMc85

The Source / Moderator



Posts: 2,223
Threads: 32
Joined: Oct 2014
Reputation: **167**
Location: New England - USA
Year: 2014
Trim: Titanium
Color: White Platinum
Engine: 2.0T
Layout: AWD

OEM_Radio Wrote:

(03-21-2016, 04:39 PM)

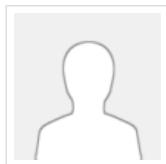
Yeah.. but thats the best part about the changes I make.. you don't have to use the DSPs remote because there is no more processing.. and the volume becomes variable rather than solid..

It is funny because I used my volume control on the Ford unit with my MS-8, I could tell it messed with the sound at different volume levels other than what it was calibrated at... this change is very welcomed. Just hated the little dinky wireless remote control and not being able to use the steering wheel without hurting audio quality.

Reply

03-21-2016, 11:05 PM

#8



OEM_Radio

Member



Posts: 63
Threads: 0
Joined: Mar 2016
Reputation: **9**

DanMc85 Wrote:

(03-21-2016, 11:00 PM)

It is funny because I used my volume control on the Ford unit with my MS-8, I could tell it messed with the sound at different volume levels other than what it was calibrated at... this change is very welcomed. Just hated the little dinky wireless remote control and not being able to use the steering wheel without hurting audio quality.

Right.. thats exactly why this is si beneficial.. the processors are meant to set the corrections at a specific volume.. and not change that volume.. because if you do the processing changes.. and creates changes in the corrections made in the processor.. by doing it this way it is all around better because you don't have to use the aftermarket volume yo can go back to the factory volume control because there are no more corrections that change as volume increases or decreases..

Reply

04-02-2016, 10:44 PM

#9



OEM_Radio

Member



Posts: 63
Threads: 0
Joined: Mar 2016
Reputation: **9**

Ford ACM



Reply

04-03-2016, 10:22 AM

#10



tp8728
Posting Freak



Posts: 2,198
Threads: 32
Joined: Dec 2015
Reputation: **64**
Year: 2016
Trim: SE
Color: Ruby Red
Engine: 2.5L
Layout: FWD

Nice video, still trying to find a little time to pull my acm, but it will be on its way soon!!!

Sent from my SAMSUNG-SM-N910A using Tapataalk

Reply

04-03-2016, 10:44 AM

#11



OEM_Radio
Member



Posts: 63
Threads: 0
Joined: Mar 2016
Reputation: **9**

tp8728 Wrote: (04-03-2016, 10:22 AM)
Nice video, still trying to find a little time to pull my acm, but it will be on its way soon!!!
Sent from my SAMSUNG-SM-N910A using Tapataalk

Thanks.. I hate making videos.. but I like helping people have an understanding of things.. so I take the chance.. ha ha.. I cant stand to hear my self.. 😞

Reply

04-03-2016, 11:46 AM

#12



FR9Ford
Senior Member



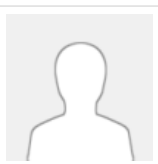
Posts: 355
Threads: 18
Joined: Mar 2016
Reputation: **5**
Location: Oakwood, OH
Year: 2014
Trim: SE
Color: Ingot Silver
Engine: 1.6T

So the way I have mine wired right now, is I have my LOC cut in behind the ACM with the two rear door speakers. I assume what you do to the ACM will eliminate the clip that the ACM is sending to those at high volumes?

Reply

04-03-2016, 12:06 PM

#13



OEM_Radio
Member



Posts: 63
Threads: 0

FR9Ford Wrote: (04-03-2016, 11:46 AM)
So the way I have mine wired right now, is I have my LOC cut in behind the ACM with the two rear door speakers. I assume what you do to the ACM will eliminate the clip that the ACM is sending to those at high volumes?

What I do is make it where you no longer need any LOC.. and change the output to an RCA level output.. you can install RCA connectors and take the LOC out.. I only suggest the conversion if you are doing a full audio build.. for subs only it isn't benefical due to you still needing the factory high level out to power the speakers.. I can eliminate the processing.. and it helps..

Joined: Mar 2016
Reputation: 9

The ACM clipping is how it will clip on your current ACM.. so if your going above that you are sending a clipped signal to the amp..

Reply



FR9Ford ●
Senior Member
★★★★★

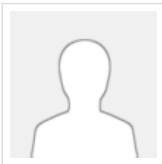
Posts: 355
Threads: 18
Joined: Mar 2016
Reputation: 5
Location: Oakwood, OH
Year: 2014
Trim: SE
Color: Ingot Silver
Engine: 1.6T

04-03-2016, 12:15 PM

#14

I don't plan on doing a full build. I may swap the OEM speakers to get a littler more quality out of them, but I won't be adding more amps or anything like that.

Reply



OEM_Radio ●
Member
★★★

Posts: 63
Threads: 0
Joined: Mar 2016
Reputation: 9

04-03-2016, 12:32 PM

#15

FR9Ford Wrote: (04-03-2016, 12:15 PM)

I don't plan on doing a full build. I may swap the OEM speakers to get a littler more quality out of them, but I won't be adding more amps or anything like that.

In that case.. It wouldnt be a good option.. I can turn the processing off.. but it won't do a whole lot..

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