Yesterday, 07:10 PM #1

The_Maniac

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2004 Chevrolet Monte Carlo

Join Date: Apr 2010
Location: Mentor, Ohio
Posts: 10,087

Add Factory XM and Aux Jack (pic and reading heavy)

If you decide this is the project for you, I suggest doing some research before you rip your Monte apart to do this mod. I had a lot of trial/error research of my own and still ran into some surprises. I'll try my best to make note of anything I know of as I explain this.

Based on everything I have done, I don't believe this is a beginner mod. For example, if you have not worked with a soldering iron, I would advise getting additional assistance if you decide you want to do this.

As a disclaimer, this went perfect with my car, but I will not be held responsible if you experience any problems with following this information with your car. This is to share information that worked for me and might be helpful if you wish to do this mod OR perhaps it's helpful information for other mods.

What is this mod:
For those who want factory XM service, this can be a way to add factory XM to your car. In my case, I wanted an aux jack on my factory radio. The reason I am adding XM to my car is so my radio has an option that I could easily over ride and plug in my own auxiliary audio input, but did not require something like my CD player to be operating (why have a CD spinning if I am not listening to the CD). I got this idea from many postings I read like the link below (PDF attached in case the link dies) where people hi-jacked the factory XM for an aux jack:
http://chevyavalancheclub.com/index.php?topic=11990.0
See PDF **Aux Jack Install.pdf** in case the link goes dead.
Before I go any further, for those just wanting an aux jack, you can save time and effort going to 1 Factory Radio and ordering a factory radio they modified (they even offer a bluetooth mod). They manage to tie their aux input into a part of the radio before the pre-amp, overriding any audio (FM/AM/XM/CD/Tape) when you activate the aux source. I tried finding out the secret to this mod, but could not find the chip specs to my radio, so I chose the XM route.
There is also a product sold as an iSimple device that offers similiar and additional functions for this idea.
I knew about these before I went into my mod, so you are probably asking yourself "why did he not order a pre-modded radio?". I know that my out of pocket is less then buying their radio, but my time exceeds the cost of their radio. Primary reason, I wanted a challenge and to learn something new.

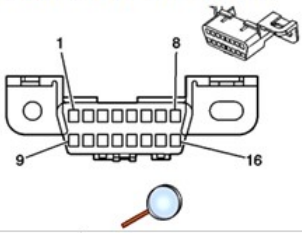
The Rules: When I do mods like this to my Monte, I have a couple rules:
1. - Do not drill new holes in the body of the car.
2. - Do not cut/splice any factory harness. It is fair game to add a new pin to an existing harness/connector and it is also fair game to fabricate a plug-n-play T harness. And splices on any of the wires I add to the car are fair game (just no splicing wire original to the car).
My rules increase the challenges to the project, but I feel it is a bit of an art form.

What you need:
- Radio Shack Part Number 274-0246 1/8" Stereo Phone Jack - This specific jack allows an audio source (like XM) to work without issue, when a source is plugged into the jack, the original source, in this case XM, is disconnected and the new source plugged into the jack takes over.
- I recommend that you solder any and all splices you make to your wiring and heat shrink tubing for any splice you make to your harness. Wrapping wires in electrical tape/and or wire loom is also recommended. I used wire loom and a combination of tape and zip ties to hold my harness to a factory harness.
- XM Module (donor car) - If you intend to ever activate XM service, use part number 22715385, found in 04-05 Montes/Impalas and some Chevy trucks. If you never plan to subscribe to XM, you can use part number 22692861 found in N-bodies, like the Grand Am. My testing suggests that the N-body XM receiver does not work in a Monte/Impala. The issue with the N-body XM receiver is that once bypassing Teftlock by de-chipping, this receiver displays "Check XM" on the radio when you select XM1/XM2, suggesting that if you want factory XM, they will not work in a Monte. The receiver I got from a Monte Carlo will play the XM preview channel if I plug in the antenna, suggesting all is good. Other receivers may work, but they must be older generation units (such as, I tested one from a Cobalt and it will not work at all for this project). If you plan to subscribe to XM, you will have to overcome the anti-theft issues, as the XM receiver is tied to the VIN of the car it originated from. The GM Tech II has an option to program a XM (Digital Radio Receiver), but it does not do anything (I know first hand and read many posts of people with the same issue). You options are to buy a new receiver, dechip a junk yard receiver (may have side effects, I read about issues with pre-sets) or send your receiver to a company like this one to unlock it: XM Receiver (DRR) Theftlock Reset ? Global Auto Tech
- XM Antenna (donor car) - **Only required if you plan to subscribe to XM.** I do not have one installed in my car, as I did not want to drop the headliner or drill the roof for a service I don't plan to use. I do have an antenna for testing.
- XM Wiring (from radio to XM receiver) (donor car) - Make sure you get a wire with a connector/clip/pin to add to the fuse block (the wire can be safely removed from a junk yard fuse panel harness, requires a small screw driver or a pick is preferred). Also get an extra wire to add to the connector going to the radio (if you clip the large radio harness, you can pull that wire later at home). It is easier to pull the XM wiring from a N-body (the radio, XM receiver and related wiring is all in the front of the car), then a W-body (was the Monte/Impala harness is snaked around the dash and all the way to the back of the car). I have pulled the wiring from both. Since I planned to mount the XM receiver in the trunk, I used the Monte wiring and because my routing path differed from factory, I had to shorten the harness by about 3feet (Grand Am wiring I would have to extend). I also chose the wiring from a Monte because the audio wires were foil wrapped for shielding (not that it should matter since I am not going to subscribe to XM, but if I ever need that wiring for something else in the future). Below is a pic of a car I pulled my XM wiring from, to give you an idea of what you would be up to if you share my choice.

Once you have you XM receiver and a wiring harness, I recommend you test your XM receiver to see if it works

with your car and radio. This is very easy to do and does not require disassembling the car. You can use the diagnostic port under the dash. I pulled multiple harnesses, I used a Grand Am one for testing. To test, I had to identify the Power/Ground/Data wires in the XM harness, I stripped them back and wrapped them around paper clips and covered with electrical tape (so during testing they never made accidental contact with each other). Once done, car off, no XM receiver in the harness yet, connect the pins to their appropriate locations on the diagnostic port.

Data Link Communications Connector End Views

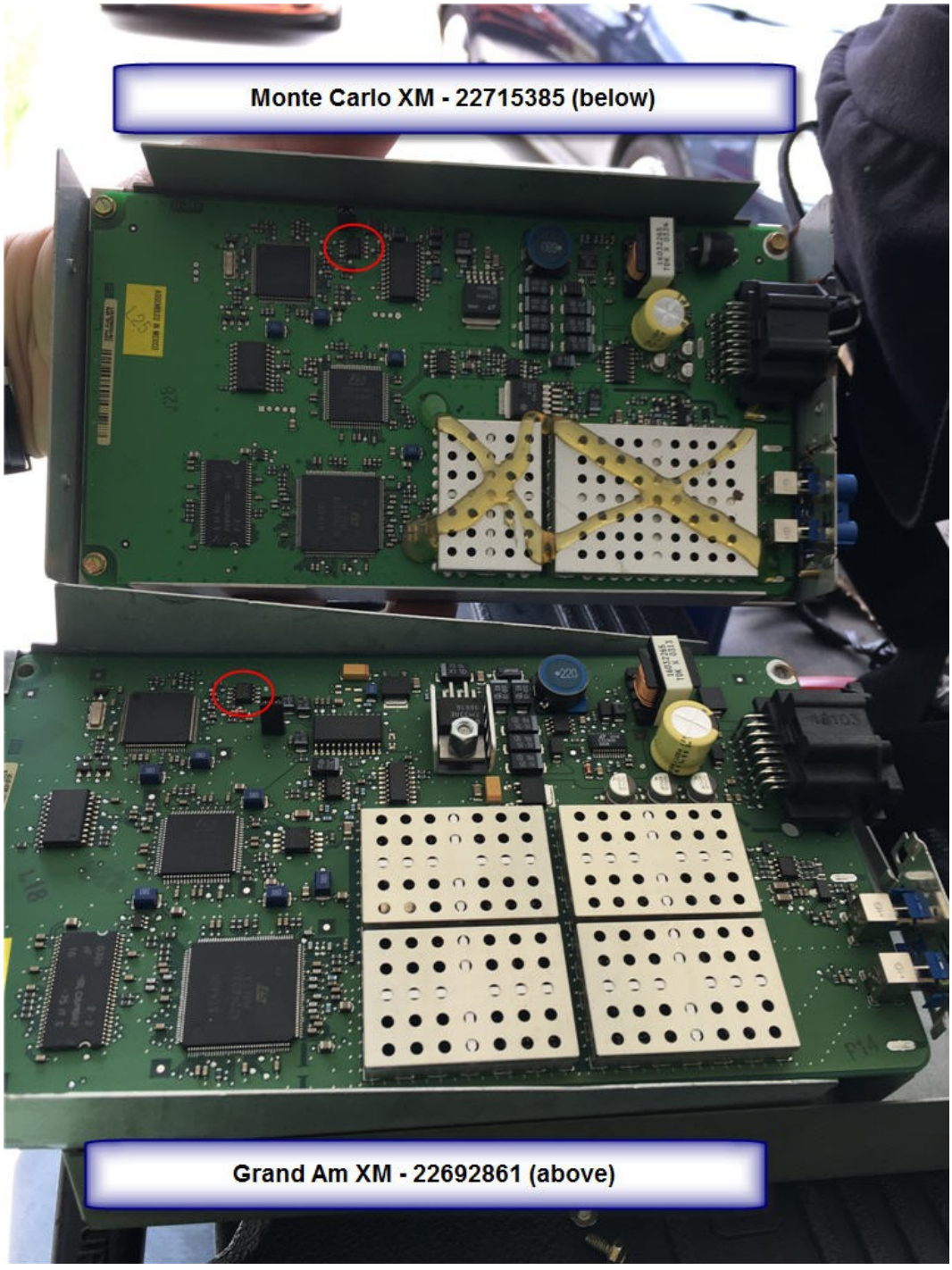


Connector Part Information	• 12110250 • 16-Way F Metri-Pack 150 (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
1	--	--	Not Used
2	PPL	1132	DLC Class 2 Serial Data
3	--	--	Not Used
4	BLK	1050	Ground
5	BLK/WHT	1251	Ground
6-15	--	--	Not Used
16	ORN	2140	Battery Positive Voltage

Once connected, connect your XM receiver to the harness, start the car. You should now be able to hit the band button and cycle through FM/FM2/AM/XM1/XM2 if it works. Cycle multiple times. I did bump into a small issue with a Chevy radio and XM receivers in Theftmode (discussed further down).
I recently tried this test with a Grand Am receiver in Chibiblacksheep's '00 Monte to see what would happen. His Monte radio did not see the XM receiver. I am not sure if it is the radio or another aspect of his car as to why it did not recognize the XM receiver, perhaps it needs a Tech II to unlock it (granted, none of my successful tests required a Tech II, they worked). In case it matters, I am using a factory MP3 radio, model number 10348717, which GM never offered in the 00-05 Montes (it was an option in the Cavalier and Venture Van). When I performed this receiver test with my Monte and my '04 Grand Am, they both recognized the receiver instantly.

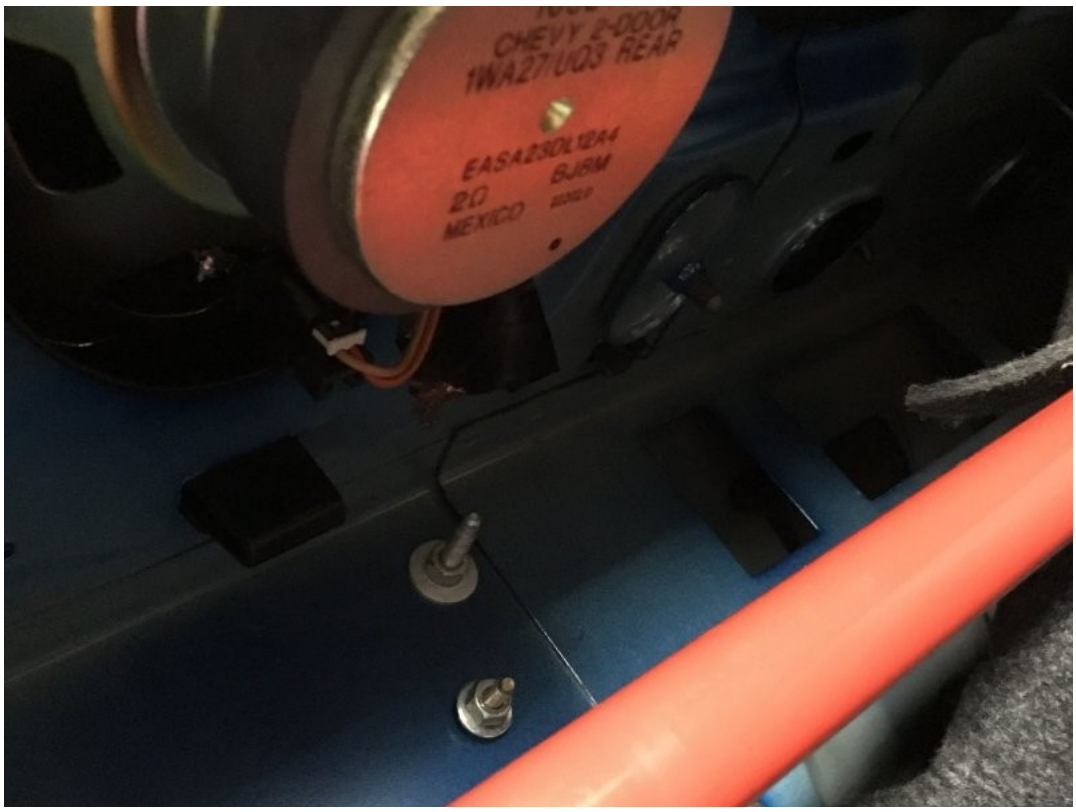
To save the pain I went through, I did most my initial testing with a Grand Am and learned the Pontiac and Chevy radio handle the XM theft lock differently. While the XM receiver is in Theft mode, the Chevy radio will eventually lose connection to the XM unit until you cycle the ignition. Please refer to the attached **"XM Testing Matrix.xls"** file for more information on my testing about this topic. For me, my end result was to de-chip the XM receiver to bypass the theft mode. If you are ready to move forward, this is the time to decide how you are handling theft mode.

Regardless of which XM receiver you are using (W-body or N-body), you want to remove the 8-pin chip labeled 9355093 (see the pic below, the chip circled in red). The chip may be the same in other XM receivers and appears to be involved with theft lock in factory radios as well. I found many links that talked about this solution from gpona.com, but the link was dead. I finally got lucky and found someone else shared enough information about this work-around here: https://gmtnation.com/forums/threads...n-03-tb.15007/
See **XM TheftLock Fix.pdf i**n case the link goes dead. It was a different XM receiver, same fix.



Now we are ready to get serious. Factory XM in a Monte and Impala is mounted in the trunk, behind the right rear wheel well. If you have factory XM, GM has two studs on that wheel well to hold a plate that has the XM receiver mounted to it. I did not have XM, I did not have those studs. I found a spot I like much better.

Behind the right side of the rear seat, GM has a brace under the speaker that goes from left to right. It already has a couple of factory holes in it (see the nut/bolt set up I have in them in the below pic). Perfect location. If you choose those location, I advise doing so when you have the rear seat out (which will be required for running the wires). I made a card board template and transferred it to the XM receiver housing. Be careful you clear the black plastic tab for the speaker hanging down. I also used a third nut/bolt to balance the XM receiver in the large rectangular hole further to the right. When installing, I found it helpful to have a Gear Wrench with a swivel head to get into the tight spacing behind the rear seat.



I dis-assembled the casing, removed the original mounting bolts (had to use a Dremel to do that), drilled new ones to match my template. To avoid any metal-on-metal vibrations, I used a nut and washer on each new bolt to shim the XM receiver the width of that nut/washer from the body of the car. When I attached it to the other side, I used a nut, lock washer and washer to ensure nothing comes loose.

Once you have the receiver mounted, you are ready to disassemble and run some wiring. **Before going forward**, disconnect your battery. This is so you don't harm yourself or the car as you modify connections. During various parts of this, I did reconnect my car's battery and tested things (such as to ensure my power connection for the XM receiver was getting 12 volts). I may have tested things more then I needed. I am not going into every location I tested a part of this project.

You will need to remove the following items:
- Main driver side dash piece in front of the instrument cluster and the radio.
- Glove box.

- Kick panel piece between the passenger side foot well and the glove box.
- Rear seat (top and bottom pieces).
- trim piece covering the edge of the carpet at the passenger side door opening.
- Upper and lower passenger back passenger side interior quarter panel trim pieces.
- Remove the radio.

Since there are multiple threads/posts/YouTube videos about these items, I am not going to discuss removing them.

Once I had access to the areas I needed to work, I mocked up the XM wiring harness. I decided how I needed to trim it shorter. The Monte/Impala harness, GM built in two pieces and I kept it that way (it had a "quick" connect). I also attempted to keep the connection for it as close to factory as possible.
Here is the wiring harness I pulled from the junk yard and how it started before I shortened it.

I'm a little out of step, before I shortened the harness, I wrapped it in wire loom and test fit it. I routed it down from the radio and followed an existing harness that runs along the HVAC module. I needed to shorten this wire so the quick connect was just a little under the fuse panel, above a piece of trim.

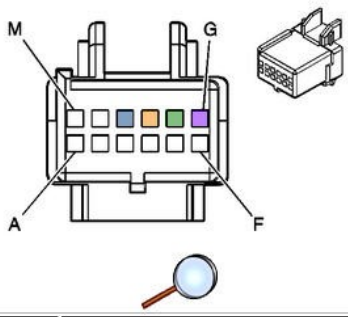
One issue I had trouble figuring out how to overcome was connecting the XM receiver to the car network. I found on the radio in my Grand Am and Monte (and I suspect many other GM radios) that the pin used for data on the main/larger radio connector happens to pass through to pin G on the smaller connector used for things, such as XM. Below are the pin outs for that connector. My Monte also had pins in an existing connector for L and M, I slide those pins out of the original connector and into the one I was using for XM. I believe those pins were for OnStar, which I don't have, but I figured, keep them since they did not interfere with what I was doing.
If you recall, earlier I mentioned to cut the big radio connector and bring it home. There are write ups/videos on the Internet that explain how to remove the pins from that connector (you may need a paper clip or a thin/stiff wire). Remove one of those pins and install it into ping G of the radio side connector on your XM wiring. Do what you need to tie this into the data connection of the XM connector on the XM receiver side (should be a dark blue wire in pin position 15). I don't recall if I had to do anything special with the quick connect GM had for the XM wiring or not, so please check that as you move through this.

GM Service Information

2004 Pontiac Grand Am | Alero, Grand Am (VIN N) Service Manual | **Document ID: 1257683**

Entertainment Connector End Views

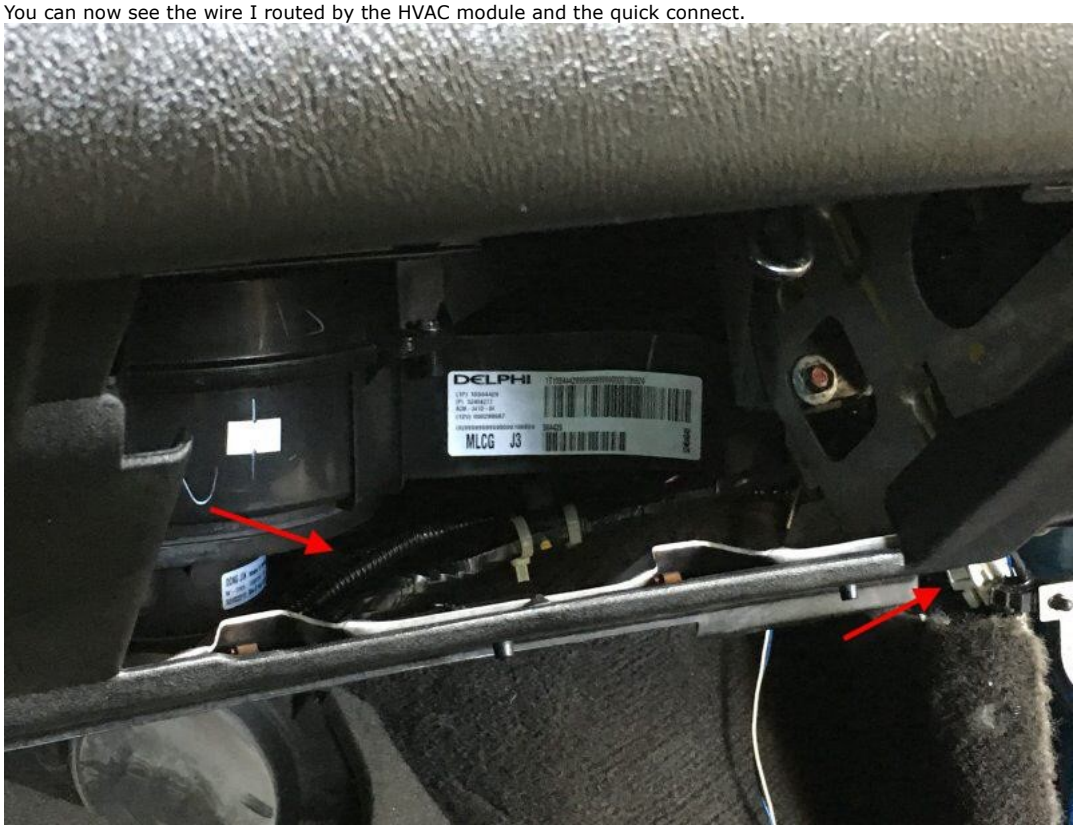
Radio, C2 (U2K)



Connector Part Information	• 12064799 • 12-Way F Micro-Pack 100 Series (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A-F	--	--	Not Used
G	Add Wire	1807	Class 2 Serial Data - Pass Thru from main connector
H	DK GRN/WHT	368	Remote Radio Right Audio Signal
J	BRN/WHT	367	Remote Radio Left Audio Signal
K	BLK/WHT	372	Remote Radio Audio Output (-)
L-M	--	--	Not Used

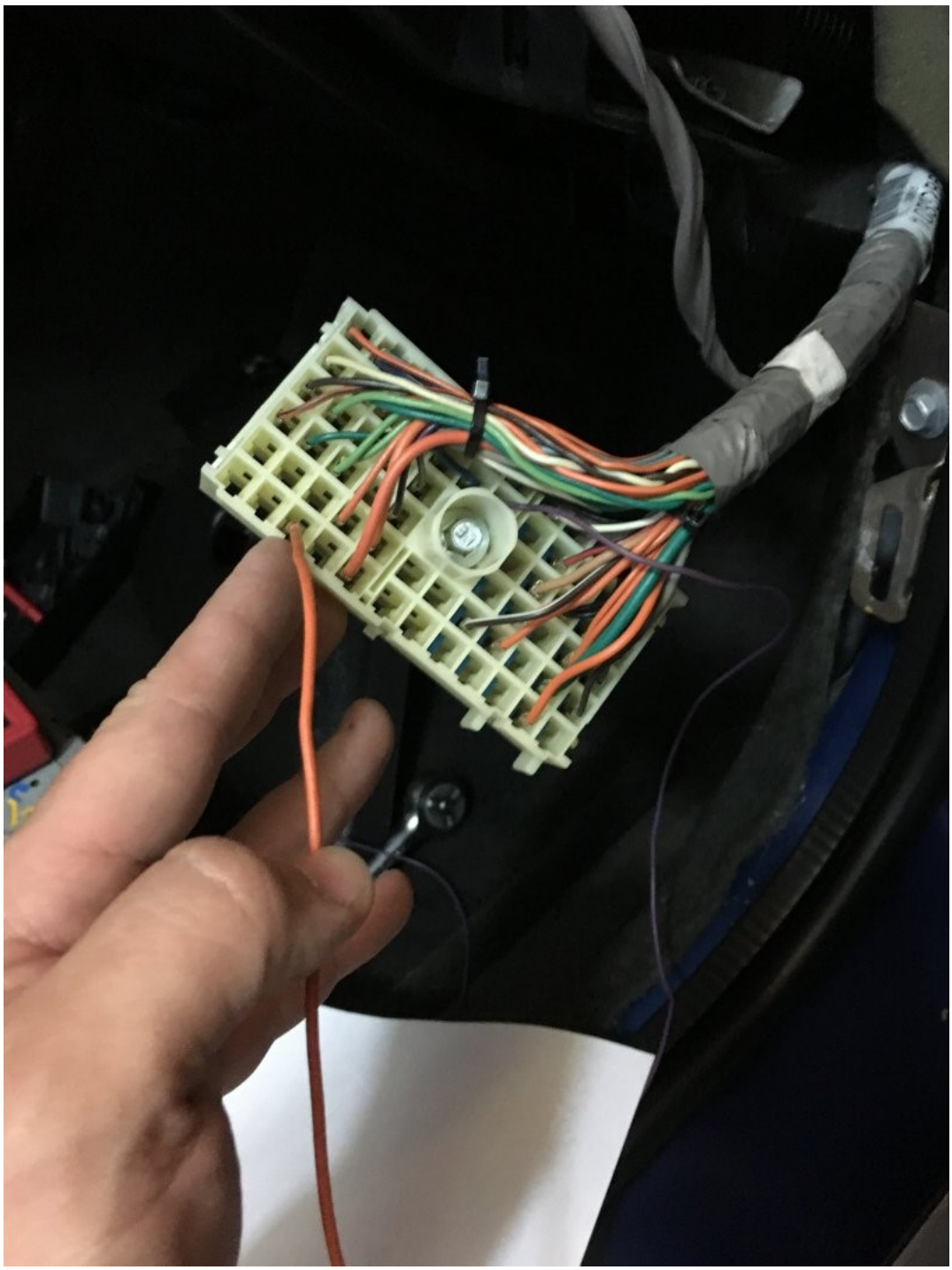
Below is a pic of my shortened two piece XM harness, I added a pin for data from the radio to the quick connect, wrapped it in wire loom. I left access to the power and ground wires that still need connected.

You can now see the wire I routed by the HVAC module and the quick connect.



When I pulled the harness I needed, I also clipped a factory ground wire from the donor car that had a ring connector. Pulling back the carpet, there is a factory chassis ground point. I removed the bolt, added the connector from the donor car. Once I had the harness in the correct spot, I trimmed the ground wire from my XM donor harness, soldered the ground wires together and sealed them with heat shrink tubing.

Now to get power, with the battery disconnected (so the car has no power), I removed the outside connector on the passenger side fuse block. Once removed, a small screw driver can help you pop the back cover off. I had to pull out the blue side piece (a "keeper" to help ensure none of the pins back out). Once removed, I inserted a wire I got from the donor car into position F10 Orange wire in my hand that is not wrapped in the harness). F10 is a battery positive connection that is used for OnStar, which my Monte does not have, so this connection was blank. If I had factory XM, it would have been tied into the same circuit the factory audio amplifier uses. I could not find an area where I could make a T-harness and tap into that. I refer back to my rules for this mod, not to cut/splice into any original wires. In this case, I added a pin to a factory harness. If this was not an option, I would have considered probing with a volt meter to find another available pin in the fuse block to battery positive. If that did not happen, I would further research this until I found an answer that met with my rules (again, a personal challenge).
I reinstalled the blue keeper I had to remove from the connector. This was a point where I properly reconnected the connector to the fuse panel, reconnected the battery and then with a volt meter, checked to ensure I had 12v on my newly added orange wire. Once validated it worked, I disconnected the battery, put the cover back on the fuse panel wiring harness and connected my new orange wire to the power connection for my XM harness.



I then completed routing, securing and connecting the XM harness. I was able to pretty much follow a factory harness to an opening behind the rear seat and then plug it into my XM receiver.

Once all routed, secured and connected, I could then test again if my radio had XM options. When I first did this, I was unaware of the XM theft lock issues with a Chevy radio, so I would cycle to the XM option and get XM Locked (which I expected), but cycle some more and eventually the XM disconnected and I had to cycle the ignition. I wrote this post so anyone reading avoids this unexpected surprise.

I mentioned earlier my Monte had a connector already like the XM connector. It has two pins in use that don't overlap with the pins I need for XM. I gently removed those two pins from their connector and re-installed them in the same position in the connect I am using for XM. No cutting. Below is a pic of the two connectors.

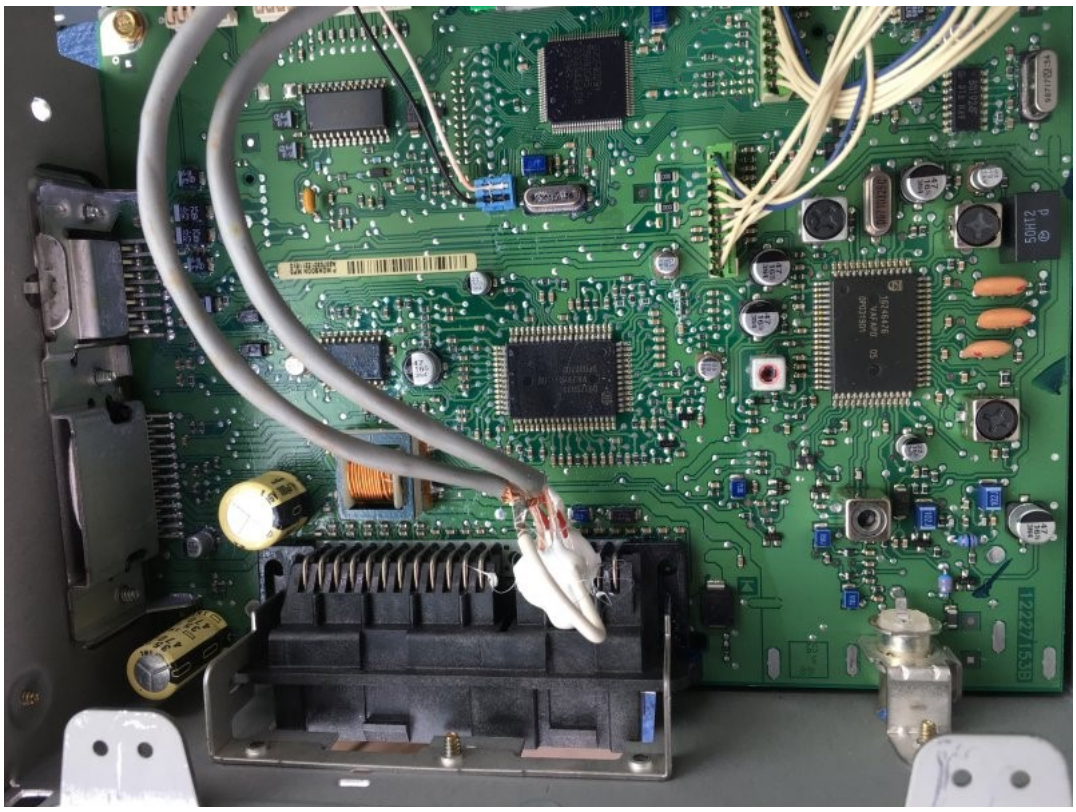
If you are doing this to gain XM, I am sorry this is where I stop with adding XM. To finish the job of gaining XM, you will need to drop the headliner, drill the roof for the antenna, mount the antenna and route the antenna wire to the XM receiver. If you mount the receiver where I did, you should have plenty of antenna wire to get it to the receiver.

As mentioned, I did this for an aux jack. I opted to have my aux jack on the radio itself. This way I was not mounting it to a trim panel and it appears more natural that it was part of the radio. So, next step, to take the radio apart.

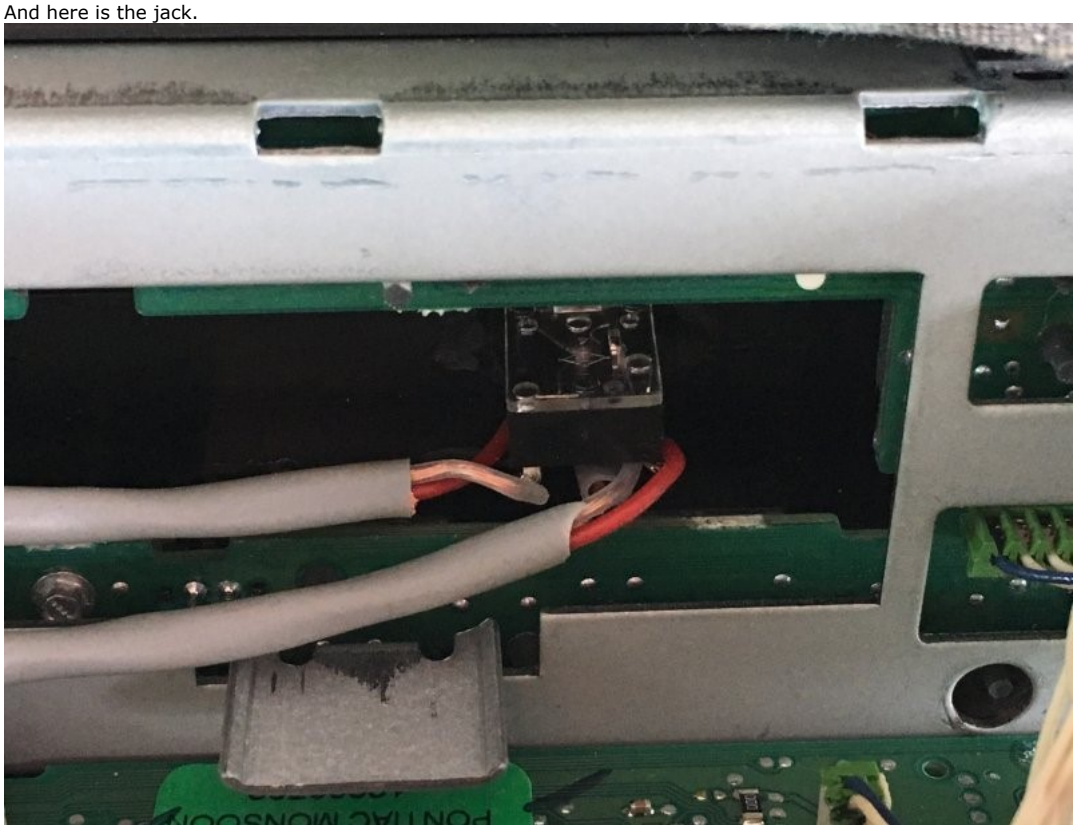
You will need to gently pry open the bottom cover and you will need to remove the face plate.
Admittedly, I had my father do this part, as he is more experienced in soldering in tight spaces then I am.

If you look back at **XM Connector.jpg**, this shows the remote radio left/right signals (pins H and J) and the common/ground (pin K). I believe GM has an error in this diagram, so when we were at this part of the project, we used one of my extra harnesses to math the diagram and the radio, ensuring where was done is correct. Much like what is done in the attached **Aux Jack Install.pdf**, we broke same connections he did, except instead of at the wiring harness, it was done in the radio, but the same exact idea. Side note, we fond if using a chassis ground on the radio is used, a hum was heard, so use the same ground the XM uses for your jack.

The pics below are from when we did this to my Grand Am. Process and pins are the same for doing this on the Monte. You snip the pins for left/right audio on the inside of the radio, you now have XM side and Radio side of those pins, wire them like the person did in **Aux Jack Install.pdf** to your jack. The white globs in the pics is heat glue, used to help ensure the pins do not get recessed into the radio when connecting the radio back to the car. My dad said he took pics of the Monte radio when he wired that up, so if I can get them from him, I may update this thread.



And here is the jack.



Get the radio re-assembled, connect it to the car, make sure all other wiring for the car is connected, then reconnect the battery. Hopefully this is your final test. Tune to the XM options, then plug in you AUX source. If possible, validate your left and right audio channels work (such as if you are using a phone to stream music, see if your phone lets you shift left and right balance). One side note and the same problem has been noted with a modified radio from 1 Factory Radio. The audio via the aux jack is loud, but not as loud as the audio coming from your FM radio or CD sources. This, along with bluetooth and possible hands free are other tweaks to this mod that my father and I are working to try and answer. Bluetooth looks to be pretty easy (lots of options for receiver boards and adapters on eBay).

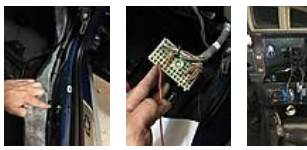
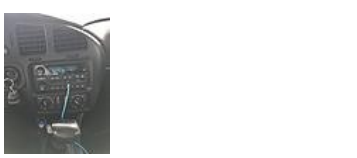
Anycase, if all is working, begin to re-assemble your car.

Below is a pic of me using my phone via my aux jack (sorry, the phone could not be in the pic, as it was used to take the pic). Since I don't have an XM antenna connected, the radio displays "No Signl". Everything works as desired in this mod. I recently used my aux jack to stream Pandora Radio from my phone and used a GPS app on my phone (the GPS would lower the volume of Pandora to give directions) and everything worked very well!

This was months of research, lots of trial and error, and a bulk of learning in the process. With everything I outlined, it is possible to accomplish this in a weekend or less if you have everything you need ahead of time.

If I left something out, I apologize, but hopefully anyone with interest in this idea gained a lot of useful information to help make this a reality.

Attached Thumbnails

Attached Files

XM Testing Matrix.xls (42.0 KB, 1 views)
Aux Jack Install.pdf (1.04 MB, 2 views)
XM TheftLock Fix.pdf (1.92 MB, 2 views)

-Jason
Check out my websites below:
- **1984 Camaro Z28 5.0 Liter HO** Restore Project/Big Toy
- **2004 Monte Carlo SS 3800 N/A** See website for MOD List
- **2004 Grand Am GT SC/T** - Current daily driver

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-- MonteCarlo37