

I just completed replacing the OEM Comand unit in my 2005 E320 with a Pioneer AVH-1330NEX and I thought I would share my experience. This is a rather long piece, but I encourage you to read the whole thing before starting your job as you may be able to avoid some of the situations I ran into.

Your first question might be, “Why did you install an older Pioneer model?”. Quite simply, it was something I happen to own from a previous installation. I am not a music aficionado; as long as it sounds decent, I am OK. My main reason for doing it was to get some modern features that either the OEM radio did not have or were difficult to use. For example, I am an iPhone user so I wanted Apple CarPlay so I can play my music, use my apps and make/receive telephone calls on the radio. Since I use Waze as my primary GPS app, I was not concerned about losing the GPS function of the OEM radio; this also eliminated the need to update the expensive GPS CD.

I wanted to keep the installation as simple as possible, so I maintained the factory amp and speakers. I saw a post where someone completely overhauled the audio system – that’s not for me! Again, I was in it for the modern features versus the premium sound.

### **What parts are needed and why?**

Here is the list of the parts I purchased. I purchased everything online (eBay, Amazon, Enfig Car Stereo) at a total cost of around \$250:

- a. Fiber optic amp interface - XTRONS FOBB01
- b. Fiber optic loop connector - Dension FOA1TL1
- c. Wiring harness - XTRONS AK/PA77M211/PWRC
- d. Steering wheel controls unit - Axxess ASWC-1
- e. Combined USB and AV flush mount connector - Generic
- f. Parking brake bypass - DIYBypass Parking Brake Bypass
- g. Antenna cable extension - Fakra Z 20ft Male-Female cable
- h. Antenna adapter - Metra 40-EU10
- i. Double din mounting kit - Enfig RMK7-W211

The fiber optic amp interface allows the aftermarket radio to use to the vehicle’s existing fiber optic audio system. I also removed the 6-disc CD changer since the aftermarket unit has one. You don’t have to remove it but, if you do, you will need to install a fiber optic loop connector where the CD changer was connected in order to close the system.

I purchased an extra wiring harness so I could connect directly to the OEM harness to get 12V battery power and ground for the new components. I cut out the large black Power/Ground connector from the rest of the harness because I only needed that piece. The package also came with a 2-wire cable that can directly connect to the CAN bus which is needed for the steering wheel controls. You don’t have to buy the extra harness; you can tap directly into the appropriate wires in the vehicle but I don’t like tapping into wires if I can avoid it. There are a couple of feeds that are needed for the radio and steering wheel controls that I had to get by tapping into vehicle wires, but using the connectors from this wiring harness kept this to a minimum.

I purchased a steering wheel controls module because I wanted to maintain the button functions. It works by reading the signals that the buttons raise on the CAN bus and converts them into something that the radio can understand. I also purchased a combined USB and AV (Red/White/Yellow RCA plugs) connector because I needed to bring the USB and AV connections from the back of my radio to the front of the vehicle so I could access them. The USB interface is needed for my iPhone to use CarPlay. I have both AV IN and AV OUT connections on the radio; I decided to connect to AV OUT. I don't know if I would ever use AV IN to feed video to my radio, but I think AV OUT could come in handy. If I had passengers in the back seat who cannot see the radio screen very well, I could run an AV cable from the radio to the back seat and attach a small monitor so they could watch DVD's playing on the radio.

I purchased a parking brake bypass module. The radio has a safety mechanism that prevents DVD's from being played unless the parking brake is engaged (meaning the vehicle is stationary). I did not want to be restricted by this so the bypass device makes the unit think that the parking brake is engaged. I wanted to keep the option of allowing passengers to watch DVD's while I drive.

The OEM antenna is in the trunk of the car, attached to the tuner. Since the aftermarket head unit will function as the radio tuner, I needed to run a cable from the trunk to the radio cavity so I could connect the antenna to the head unit. The OEM antenna connection is a Fakra A female type; I purchased a Fakra Z male-female cable to attach to it. Fakra Z is a universal connector so it can connect to any version of Fakra connector. Once you get the new cable into the radio cavity, you need to convert it to a standard antenna connector so I purchased an antenna adapter to accomplish this.

Finally, I purchased a mounting kit so that the aftermarket radio fits into the cavity nicely. The kit I purchased is for standard size double-din radios. I got burned on a different installation project when I purchased a cheap Chinese radio which was not standard size and I had to modify the mounting kit. That was a pain, so I promised myself that I would never do that again!

There was one other part needed that I fabricated myself. My OEM Comand unit has a 3-pin connector for AUX (L-GND-R) which was connected by a wire harness to a 3.5mm female connector in the glove compartment. I am handy with a soldering iron so I took a 3.5mm male audio cable, cut off one end and soldered a 3-pin connector on it to mate with the wire harness in the vehicle. I am not sure if I will ever use it, but I figured it was easy enough to hook up. My new head unit's AUX input is a 3.5mm female connector which is why I made the cable with a 3.5mm male connector. If your new unit has RCA cables for AUX input, you will have to make that adjustment to these instructions.

I did not detail this in the parts list, but I also needed some pieces of wire and crimp connectors to make some of the connections. In particular, there is a splice connector that allows you to splice a wire into an existing one. This came in handy when I had to tap into some of the vehicle's wires to get the feeds that I mentioned earlier. I had spare wires and crimp connectors from other projects so I did not have to purchase more; the connectors can be purchased at a place like Home Depot. I also did some soldering and heat shrinking of the various component harness wires. You can choose to connect everything with crimp connections, but I like soldering when possible because the connections are more secure.

## **Combine the harnesses**

Now that I had all of the parts, it was time for the installation. I removed the aftermarket radio and steering wheel controls module from their harnesses to make it easier to work on them; the fiber optic unit could not be detached from its harness. I connected as much of the various harnesses together as I could on my benchtop:

- I soldered the 12V Battery wires of the aftermarket radio and fiber optic unit to the yellow wire of the black connector I cut from the extra wiring harness. This will supply both of these devices with 12V from the existing OEM radio harness in the vehicle.
- I soldered the 12V Accessory (ACC) wires of the aftermarket radio and steering wheel controls together along with an additional wire; this wire will be connected to an ACC feed from inside the vehicle that I will get later. For now, I put a crimp connector on the end of the wire so it will be ready to connect with the ACC feed when it is available.
- I soldered the Ground wires of the radio, fiber optic unit, steering wheel controls and parking bypass to the black wire of the black connector. The steering wheel controls instruction manual said to connect its ground wire directly to the chassis but I did not do that.
- I soldered the blue wire of the parking brake bypass to the Amp turn-on wire of the radio and I soldered the green wire of the bypass to the Parking Brake wire of the radio.
- I put crimp connectors on the ends of the 2-wire CAN bus wires; my wire colors were green and green/black. I put mating connectors on the pink and blue/pink wires of the steering wheel controls harness. I connected the green/black wire to the pink wire and the green wire to the blue/pink wire.
- Finally, I put crimp connectors on the Illumination and Reverse wires on the aftermarket radio harness. I will get those feeds from inside the vehicle later.
- I used some wire ties to organize this mess of harness wires to make them easier to manage.

## **Remove the existing equipment**

It was time to remove the OEM radio, CD changer and cigarette lighter compartment. Enfig has a great online video for this (<https://www.youtube.com/watch?v=zJALScfHdBI>); I will detail the extra steps that I took to remove the CD changer from its housing. This was done by first removing the two harnesses from the bottom of the housing; they are held on by plastic clips. Next, I removed four screws (two on the bottom and one on each side) from the CD changer. Now free, the changer slid out of the housing. I put the mounting screws back into the changer for safe keeping. I connected the fiber optic loop to the connector that the changer was connected to and tucked it out of the way.

## **Mount USB and AV connector**

I used the cigarette lighter compartment to mount the USB/AV connector. I drilled a hole in the back of the compartment large enough to push the USB and RCA plugs through it. Using some screws, I mounted the connector inside of the compartment next to the cigarette lighter. I fed the USB and RCA plugs in the back of the radio cavity so they can be connected to the aftermarket radio. Once installed, it is a great way to conceal the connector and store the iPhone cable when not in use.

### **Make in-vehicle wire connections to the combined harness**

I brought the combined harness assembly to the radio cavity and connected the black Power/Ground connector to the OEM harness in the vehicle. As I mentioned earlier, I need ACC and Illumination feeds to connect to the combined harnesses. The cigarette lighter harness has three wires; the ACC feed is the red/white wire, the Illumination feed is the thin green/white wire in the middle and the brown wire is Ground. Using splice connectors, I connected wires to the ACC and Illumination wires and put mating crimp connectors on the ends of the spliced wires that corresponded to their counterparts on the combined harness. I connected those wires to their counterparts on the harness.

### **Install AM/FM antenna and microphone connections**

Next, I needed to run the antenna cable from the trunk to the radio cavity. I removed the trim from the bottom of the doors on the driver's side and removed the back seat so I could access the trunk. Here is the post I used to remove the trim (<http://www.peachparts.com/shopforum/detailing-interior/350069-w211-b-pillar-trim-removal-replace-diy-w-pictures.html>). I did not completely remove the B-pillar trim; I just loosened it enough to allow the antenna cable to pass through the bottom. This is the video I used to remove the rear seat ([https://www.youtube.com/watch?v=e\\_JDjQZAjzc](https://www.youtube.com/watch?v=e_JDjQZAjzc)).

Behind the seat there is an opening to the trunk so I fed the male end of the Fakra Z cable through it, giving it about 3 feet so it can reach the tuner. I ran the rest of the cable down the side of the rear seat, through the rear door sill channel, under the B-pillar trim and through the front door trim channel until it reached the front of the car. I plan to install a rear camera at some point, so while I had everything open to run the antenna cable, I also ran the wires for the camera. The camera I purchased came with a long cable that combined an RCA video connector with a wire for the Reverse feed.

In the trunk, I had to remove the gray trim on the driver's side in order to access the tuner in which the OEM antenna cables are plugged. There are two plastic rivets at the top and two Star screws at the bottom holding the trim in place. Once they were removed, I was able to pull the trim back far enough to access the tuner. Some instructions I found directed me to remove the three 10mm bolts that mount the tuner; I was able to reach the two antenna wires (black and yellow) without having to do that. Disconnecting the antenna wires was a little tricky because I had to push down on a small release tab on each connector and pull it out. Once the antennas were disconnected, I plugged the antenna cable I just ran into the black (AM/FM) antenna cable; I left the yellow cable (Satellite) unplugged. Since I also ran the rear camera cable, I tucked it away in the trunk for later use.

To reach the radio cavity, I loosened the trim underneath the driver's side of the dash by removing three Star screws on the trim. I did not have to completely remove the trim; there was plenty of space to run the antenna cable and rear camera cable through and feed them into the radio cavity. I attached the antenna adapter to the end of the antenna cable. I put a crimp connector on the rear camera's Reverse wire to mate with the Reverse wire on the radio harness and connected them together.

While still open, I fed the radio mic's 2.5mm connector under the dash and into the radio cavity.

### **Make the CAN bus connection**

The steering wheel controls installation instructions said that there were CAN bus connections on the OEM radio harness, but that was not the case for my harness. Instead, I connected the green CAN bus wires directly to the CAN bus strip. There is a CAN bus strip underneath the dash on the passenger side. I removed the trim underneath the dash by removing two Star screws and pulling the trim out. Be careful doing this because there is a light connected to this piece of trim; I had to remove the connector wire on the light before I could completely remove the trim. Once the trim was removed, I fed the green CAN bus wires from the radio cavity to the passenger side. Looking under the dash with a flashlight, I found the CAN bus strip.

There are pairs of brown and brown/red wires connected to the bus; brown is the CAN LO signal and brown/red is the CAN HI signal. There are empty spaces in the strip; I plugged the connector on the green CAN bus wires into the strip. I inserted the connector into the strip so that the green wire was on the same side as the brown wires and the green/black wire was on the same sides as the brown/red wires. I needed to trim some extra material from the connector so it would fit into the bus.

### **Prepare radio mount and make final connections**

The Enfig video I included in the equipment removal section also covers installing the mounting kit. The mounting kit comes with metal locking tabs that need to be installed on each side of the radio with screws; those tabs fit into a metal sleeve and lock the unit in place. The video does not tell you how to install the tabs; it took me a little while to figure it out. I installed the tabs and checked the radio's fit in the metal sleeve on my workbench before attempting to install it in the vehicle. The tabs have small adjustment holes to mount them in the right place to allow the radio to lock in the right position when inserted in the sleeve.

I followed the video instructions for installing the kit and mounting the radio. Before mounting the radio, I made all of the final connections in the back of the unit:

- Steering wheel controls module on the wiring harness (the fiber optic unit was already in place because it did not detach it from its harness)
- Radio harness connector
- RCA connectors from the fiber optic unit. These are the left and right audio signals. Be sure to plug them into the LF and RF connections because the radio plays telephone calls in the front channels.
- USB plug
- RCA plugs for AV OUT
- Steering wheel controls plug (3.5mm male connector)
- Microphone plug (2.5mm male connector)
- AUX plug (3.5mm male connector) – this is the cable that I fabricated. The 3-pin connector gets attached to the 3-socket cable that was removed from the OEM radio
- Rear camera video (RCA plug)

## **Test operation and finalize mounting**

Once all of the connections were made in the back, I turned on the vehicle and tested it. Everything worked but there were a few things to deal with that I will discuss later. I turned off the vehicle, slid the radio into place, installed the CD changer housing (remembering to plug in the connector that it was connected to it so the controls on the doors work) and installed the cigarette lighter compartment. It took some effort to move the fiber optic unit, steering wheel controls and wires out of the way to allow everything to go back together. I was careful not to stress the fiber optic cables because they can break!

## **Adjustments and issues**

There were a few things to deal with after the radio was in place. First, I mentioned during the installation that I fed the microphone connection under the dash on the driver's side. I now had to figure out where to mount the microphone. I would have loved to mount it in an inconspicuous location, but I was not creative enough to find one. For now, I mounted it on the side of the radio with some double-sided tape. If anyone thinks of a great place to conceal the microphone, please share.

The steering wheel controls module set up itself; it was able to detect the vehicle and the radio type automatically. When it set up the steering wheel buttons, it mapped the phone on/off buttons as Mode and Mute. This was OK because my vehicle does not have those functions on the steering wheel. However, I still want to be able to answer and hang up the phone using those buttons. The steering wheel controls module supports dual-function buttons. This means that if you tap the button it will do one function but if you hold the button down it will do a different function. I plan to use this functionality to allow the phone buttons to operate as Mode and Mute (tap) and Phone On/Off (hold). The unit can be programmed using an awkward process using the steering wheel buttons or you can attach the unit to a computer via USB and run a set-up program that you download from the manufacturer's website. The set-up program also allows you to update the firmware.

To my surprise, the CD door did not open when I pressed the silver button. Through quite a bit of research, I found out that the door operation is controlled by the OEM head unit through the fiber optic system. The fiber optic unit I purchased does not have this function programmed into it. I was hoping to use the empty space as a storage area; I even purchased a plastic pocket to put into it. I found out that Enfig Car Stereo makes a fiber optic unit that can control the door. It is a bit more expensive (\$299 on their website as of 4/7/2020) but it also comes with a steering wheel controls module attached. An apples-to-apples comparison of the cost of using the Enfig unit versus what I used says that it would have been about \$100 more to use the Enfig unit. Since I did not know about the Enfig unit before I started, I never got to make the choice on whether the storage space was worth the extra \$100.

## **Conclusion**

I am very pleased with the installation. It looks good, sounds good and has all of the modern features I wanted. I am a little bummed about not being able to access the CD door – I paid \$30 for the plastic slot that I will never use! I would also like to put the microphone in a better place to make it look even more professional. I will update this post if I come across any additional learnings as I use my new system.