

The MS-FRD1 interface allows the replacement of a factory radio in select Ford/Lincoln/Mercury vehicles. The MS-FRD1 will maintain operation of the SYNC® system in vehicles with Sony®, THX®, Audiophile & Shaker audio systems & also audio systems without external amplifiers. The MS-FRD1 allows audio from the SYNC® system to play through the aftermarket radios auxiliary input. This interface will also retain an external factory Sirius Satellite Radio tuner as well as Rear Seat Entertainment (RSE). Microsoft SYNC® or the factory Sirius tuner can be controlled from the Steering Wheel Controls (SWC) or from the separate multi-function LCD display.

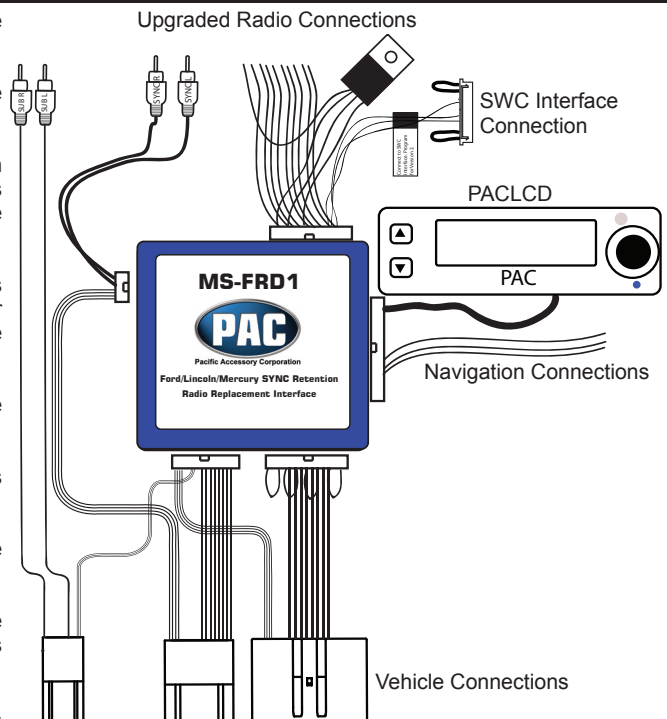
Features

- Retains all functions of SYNC® including USB, Line IN, Streaming Bluetooth Audio, Bluetooth Phone & 911 Assist
- Has independent Bluetooth Phone & SYNC® voice prompt volume levels which are user adjustable
- Retains SYNC® Menu Functions which enables searching a USB device by Artist, Album, etc when not using voice commands
- Retains Factory Satellite (when external from the OEM radio). The MS-FRD1 auto detects Factory Satellite tuner & if present adds it to the mode select menu
- Retains Standard, Audiophile, THX®, Shaker, & Sony® amplified systems. In vehicles equipped with the Sony® system you can control the Sony® amplifier directly by using the PACLCD controls or the OEM LCD (fade, balance, bass, treble, speed volume, & surround mode)
- Retains all SWC buttons. Five of seven are programmable using a radio specific SWC interface; the other two are dedicated to controlling SYNC®
- Retains OEM Display when present
- Retains Rear Seat Entertainment (Allows Single & Dual Play of DVD Mode)
- Retains Rear Seat Controls
- PACLCD backlight will dim along with OE Dimmer Control
- Provides all Navigation Outputs (VSS, Parking Brake, Reverse & Illumination) as well as Retained Accessory Power (RAP)
- Equipped with Bluetooth connection status LED

Installation

PLEASE NOTE IF RETAINING FACTORY SATELLITE RADIO: Before you remove the factory radio it is best to select ALL CATEGORIES in the factory satellite radio menu.

- Aftermarket radio connections are made to the 20-pin harness that connects to the "Radio Connections" port. A detailed description of these wires is on the next page.
- Plug the 8 pin SYNC® Audio output cable into the port labeled "Media Audio Output" on the MS-FRD1. The RCA cables will feed the SYNC® audio into the aftermarket radios AUX input. The SYNC® RCA cables are necessary to allow the headunit to play the SYNC® media audio through the cabin.
- Factory installed audio options such as Sony®, THX®, Audiophile or Shaker amplifiers will determine the 16-pin speaker connection. If the vehicle has a factory installed amplifier use the "Factory Amplified Audio" location. If a factory installed amplifier is not present use the "Non-Amplified Factory Audio" location.
- If the vehicle is equipped with a factory subwoofer plug the RCA cables connected to the 8 pin plug into the Subwoofer or Non-Fading output of the aftermarket radio.
- The navigation output connector has VSS, Reverse & Parking Brake outputs as well as the 6 pin connector for the PACLCD.
- Connect the 11 pin plug with the brown & purple loops to a radio specific SWC interface for SWC retention. No other connections or splices are necessary.
- The Mute loop (if not cut) will turn the ACC output off when either the SYNC® voice prompts or Bluetooth Phone are active. If the aftermarket radio has a mute input cut this loop & connect the outer brown wire to the mute input.
- Connect the PACLCD to the 6 pin plug located in the navigation output connector & mount in a suitable location **The following vehicles do not require the use of the PACLCD: Lincoln MKS, Lincoln MKT & 2010+ Lincoln MKZ.**



Navigation Connections (Wire side view)

13	1
14	2
15	3
16	4
17	5
18	6
19	7
20	8
21	9
22	10
23	11
24	12

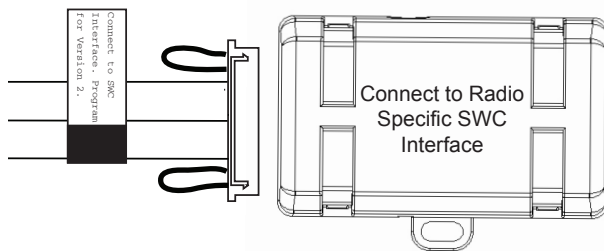
1	N.C.	
2	N.C.	
3	Lt. Green	PACLCD Connection
4	Pink	PACLCD Connection
5	Red	PACLCD Connection
6	Green	PACLCD Connection
7	Blue	PACLCD Connection
8	Purple/White	Vehicle Speed Sensor Output
9	N.C.	
10	N.C.	
11	N.C.	
12	N.C.	
13	N.C.	
14	N.C.	
15	N.C.	
16	N.C.	
17	Green	Reverse Light Output
18	Red/White	Parking Brake Output
19	N.C.	
20-24	N.C.	

Aftermarket Radio Connections (Wire side view)

11	1
12	2
13	3
14	4
15	5
16	6
17	7
18	8
19	9
20	10

1	White	FL+ Speaker Input
2	Grey	FR+ Speaker Input
3	N.C.	
4	N.C.	
5	Black	Ground
6	Yellow	Battery
7	Brown	Mute Sense Input
8	Purple	RR+ Speaker Input
9	Green	RL+ Speaker Input
10	Brown	Mute Output (-)
11	White/Black	FL- Speaker Input
12	Grey/Black	FR- Speaker Input
13	Red	RAP Output
14	N.C.	
15	Orange	Illumination Output (+)
16	Blue/White	Amp On Input
17	White/Green	SWC Output
18	Purple/Black	RR- Speaker Input
19	Green/Black	RL- Speaker Input
20	N.C.	

SWC Output Connector



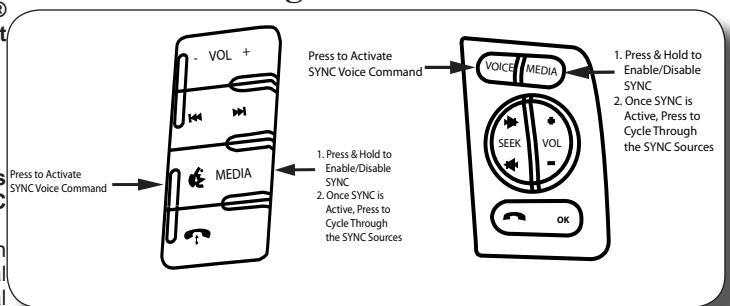
- The MS-FRD1 provides a SWC output connector attached to the SYNC-HAR harness. For ease of installation, all necessary connections for a SWI-X, ECL2, JACK, or PS have been made for you.
- When using this SWC output connector the radio specific SWC interface must be programmed for version 2 (refer to SWC interface programming instructions for exact programming sequence).
- Both loops should also remain in tact.
- When programming a SWC interface the MS-FRD1 must be in the "SYNC Idle" mode. Otherwise you cannot program the Track Forward, Track Back, & Media buttons. Press & hold the Media button on the SWC until the LCD displays "SYNC Idle". You may now begin the programming process. When programming the Media button do not hold it down for longer than one second as this will turn on SYNC mode on the MS-FRD1.

Turning SYNC® On & Off & Changing SYNC® Modes Using the SWC

*Aftermarket radio must be set to Aux Input Mode to hear SYNC® USB, Bluetooth Media, Satellite Radio or Line In audio. Phone call audio & SYNC® Voice Prompts will always be heard no matter what mode your aftermarket radio is in.

1. Press & hold the Media button on the SWC until the PACLCD reads "SYNC"
2. To change SYNC® modes you can either:
 - Press the SYNC® voice button & say USB, Line In, Bluetooth Audio or Phone
 - If you are retaining factory satellite radio you cannot use your voice to access Sat mode, SYNC® does not have this feature, you must use the Media SWC button to go into Sat mode.**
 - Press the Media SWC button. Mode switching will switch between SYNC®, then Sat & then back to SYNC® (Sat will only be present in the queue if there is an external satellite tuner. Radios with a satellite antenna plugged into them have an internal satellite tuner that cannot be retained).
3. Turn the Interface off to gain control of the Media & << />> SWC buttons to control your aftermarket radio. Press & hold the Media SWC button until you see "SYNC Idle" on the PACLCD. Vehicles equipped with an OEM external LCD display will see "DVD" displayed on the OEM LCD.
 - When the interface is off, pressing the Media button will now output analog voltage & perform whichever function you programmed it to when programming your SWC interface.
 - A separate volume is kept for SYNC® voice & phone call volume & will be displayed on the PACLCD. These can be adjusted while either is active using the SWC volume buttons. During this the Volume Up/Down SWC buttons will not control the aftermarkets radios volume.

Steering Wheel Controls



Controlling SYNC® With the PACLCD

In vehicles that are equipped with an OEM external LCD display (excluding Lincoln MKS, Lincoln MKT & 2010+ Lincoln MKZ): All SYNC®, Bluetooth & Satellite Radio text will be displayed on the OEM screen.

In vehicles that are not equipped with an OEM external LCD display: All SYNC®, Bluetooth & Satellite Radio Text will be displayed on the PACLCD.

There is a blue LED in the bottom right corner of the PACLCD that indicates whether SYNC® is connected to a Bluetooth device.

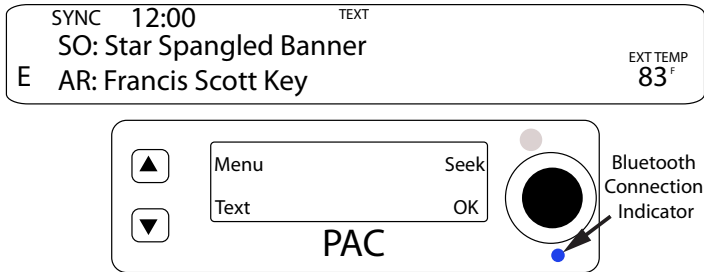
The PACLCD has four functions

- 1. Menu Button:** Pressing this button will bring up the menu of available options for the current SYNC® mode.
- 2. Text Button:** If you want to see other text options available from SYNC® pressing this button will cycle through your available text options
- 3. OK Button:** This will make menu selections & pause the USB/Bluetooth Audio source when not in the menu.
- 4. Rotating the Scroll Knob Left or Right:** This works just like the track forward & track back buttons on the SWC. If you are in a menu mode it will cycle through the available menu choices.

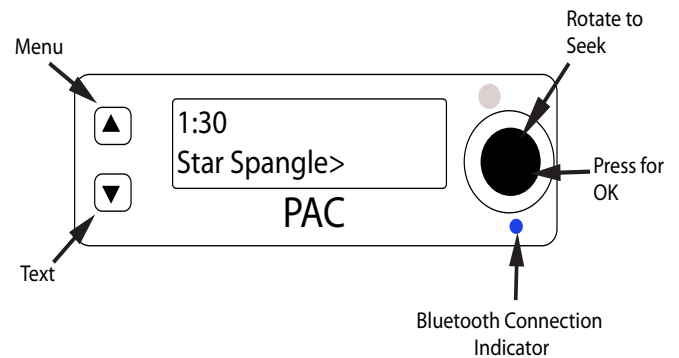
These functions only work when the interface is ON & in SYNC®, Phone, or Satellite Radio mode. For detailed SYNC® operation please consult your SYNC® operating instructions.

In vehicles equipped with a Sony® Digital Amplified Audio System: When the interface is off you will see the text "Amp Set" located next to the "OK" PACLCD button. Pressing this will bring up the Sony® digital amplifier setting onto the OEM LCD. Press the OK button and use the scroll knob to make changes to the amplifier settings. As you make adjustments the text will be displayed on the OEM display. Please note that these are making audio changes to the factory amplifier, so if you set the bass to max & also set the bass to max on your aftermarket radio it may not sound right. It is best to set the Sony® amplifier settings to neutral & use your aftermarket radio audio adjustments for the best sound quality.

Vehicles With OEM LCD Display



Vehicles Without OEM LCD Display



Controlling SYNC® With the OEM LCD Display

This section only applies to the following vehicles

- Lincoln MKS
- Lincoln MKT
- 2010+ Lincoln MKZ

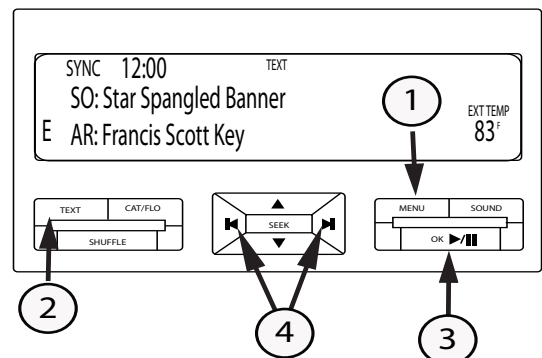
In these applications the OEM LCD display has buttons therefore the PACLCD is not needed.

The OEM LCD has four functions

- 1. Menu Button:** Pressing this button will bring up the menu of available options for the current SYNC® mode.
- 2. Text Button:** If you want to see other text options available from SYNC® pressing this button will cycle through your available text options
- 3. OK/Play/Pause Button:** This will make menu selections & pause the USB/Bluetooth Audio source when not in the Menu.
- 4. <Seek & Seek> Buttons:** These work just like the track forward & back buttons on the SWC. If you are in a menu mode it will cycle through the available menu choices.

Some vehicles may be equipped with a Phone button on the OEM LCD. If your vehicle has this button, pressing it will automatically take you into SYNC® phone mode.

OEM LCD Display With Buttons



Controlling Satellite Radio

PLEASE NOTE: This feature can only be used if the vehicle you are installing the MS-FRD1 into has an external satellite radio tuner. If the factory radio has a yellow FAKRA antenna plugged into it then the satellite radio tuner is internal & CAN NOT be retained. Satellite Radio presets CAN NOT be retained.

The PACLCD has four Satellite Radio functions

- 1. Menu Button:** Pressing this button will bring up the menu of available options for Satellite Radio. The only retainable menu options are "Category" & "Return". "Enable Alert", "Delete All", "Delete Song" & "Save Song" cannot be used as these options require the factory radio. **If the radio replaced has an external OEM LCD the Satellite Radio Menu button is not supported.**
- 2. Text Button:** If you want to see other text options available from Sirius pressing this button will cycle through song, artist, category & channel.
- 3. OK Button:** This will make menu selections while in the menu. If this button is pressed when not in a menu it will act as the factory radios preset #6. This means whatever channel was stored on preset 6 will always be recalled if this is pressed when listening to factory satellite radio & not in a menu. **If the radio replaced has an external OEM LCD the OK button is not supported.**
- 4. <Seek & Seek> Buttons:** These will change the Sirius channel or category. **When navigating the Satellite Radio Menu please use the <</>> SWC buttons. Using this knob will change your satellite channel.**

Changing Channels

Rotate the knob left or right to move through the channels

Changing Categories

Press the Menu button on the PACLCD, "Sat Menu" will be displayed

Press the OK button on the PACLCD, "Category" will be displayed

Press the OK button on the PACLCD, "Category All" will be displayed

Press the <</>> on the SWC to move through the categories

Once the category you wish to select is displayed press the OK button on the PACLCD

Now when you turn the knob on the PACLCD it will change the stations within that category only. You can still move through all of the stations using the <</>> buttons on the SWC.

Switching Back to "Category All"

Press the Menu button on the PACLCD, "Sat Menu" will be displayed

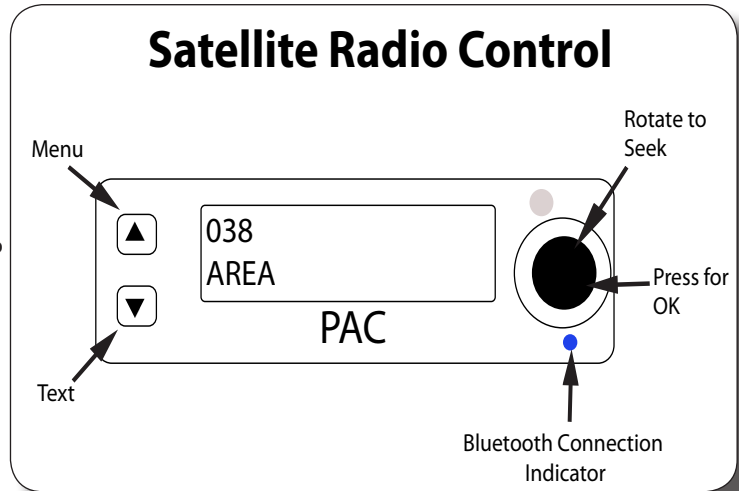
Press the OK button on the PACLCD, "Category" will be displayed

Press the OK button on the PACLCD, the category previously selected will be displayed

Press the <</>> on the SWC to move through the categories until "Category All" is displayed

Once "Category All" is displayed press the OK button on the PACLCD

Now when you turn the knob on the PACLCD it will once again move through all of the channels



Using RSE

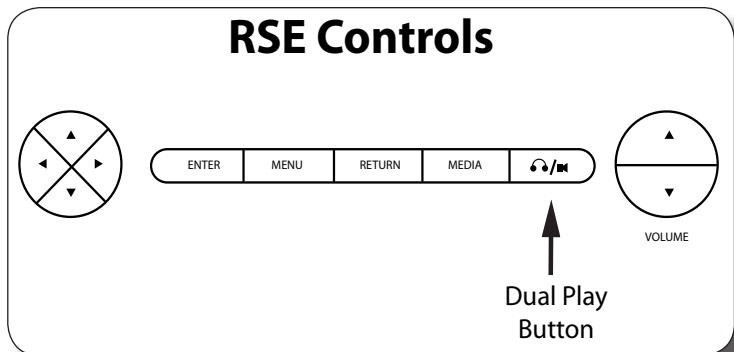
If you would like for the RSE system's audio to play through the aftermarket radio:

First set the aftermarket radio to Aux input, then turn off SYNC® by pressing & holding the Media button on the SWC until the PACLCD displays "SYNC Idle". In vehicles that are equipped with an OEM LCD this display will read "DVD". Press the Power button on the RSE & insert a DVD, you should now hear the RSE audio on the aftermarket radio. If the RSE audio is only playing on the front speakers the RSE is set to dual zone mode. Press the Dual Zone button on the RSE controls until "Single Play" is displayed across the top of the RSE screen.

RSE Audio Modes - There are 2 different modes for the RSE audio, they are Single Play & Dual Play.

1. Single Play - Press the Dual Zone button on the RSE controls until "Single Play" is displayed across the top of the RSE screen. In this mode the RSE audio is played throughout all speakers in the cabin.

2. Dual Play - Press the Dual Zone button on the RSE controls until "Dual Play" is displayed across the top of the RSE screen. In this mode the rear speakers will be muted & the RSE audio is transmitted through the factory IR headphones while the front passengers can now listen to whatever source they like including SYNC®.



Using SYNC® Bluetooth

- Press the phone button on the SWC to enter phone mode at any time
- When a phone call comes in the aftermarket audio will mute (if the brown loop is cut) or the radio will shut off (if the brown loop is not cut) & the MS-FRD1 interface will automatically switch to phone mode
- To answer the call either press the Phone button on the SWC or the send button on your cellular phone.
- To end a call either press & hold the Phone button on the SWC or press the end button on your cellular phone. The MS-FRD1 interface will automatically return to its previous mode.
- To exit phone mode press and hold the phone button on the SWC or simply press the voice button and speak the source you wish to select.
- For detailed SYNC® Bluetooth operation please consult your SYNC® operating instructions.

Installation & Operation Notes

1. When installing this interface the vehicle must be turned off. Once the interface is plugged in let the vehicle sit with all doors closed & nothing turned on for 5 minutes. During this 5 minutes please do not open any doors or arm or disarm the factory alarm. The purpose of this is to let the vehicles data-bus go to sleep so when it wakes back up the MS-FRD1 interface can automatically synchronize & initialize with the SYNC® system. Once the vehicle has been sitting for 5 minutes you can turn the ignition on & the interface will initialize for the first time. During this process the PACLCD will display "Initializing". The MS-FRD1 will now go to "SYNC Idle" mode. (You may need to cycle the ignition once after initialization when installing into Lincoln vehicles).
2. Every time the ignition is cycled the MS-FRD1 will revert back to "SYNC Idle" mode.
3. Fading is not supported when used with the THX® system.
4. **DO NOT** cut the Brown loop on the SWC interface connector. Program the radio specific SWC Interface for version #2.
5. If the accessory relay will not stay engaged after using SYNC® you will need to jump the black wire feeding ground to the relay over to the ground wire in the 24 pin harness that connects to the vehicle. This problem will only be present if the mute loop has not been cut
6. For additional SYNC® operation please consult your SYNC® operating instructions. With the button presses & modes available on the MS-FRD1 interface, all SYNC® operations are retained.
7. Satellite Radio presets (if equipped with an external Sat tuner) are not supported. Use either the track forward & back SWC buttons or you can rapidly scroll the PACLCD knob to quickly get to the desired Satellite channel.
8. The Auxiliary input on the rear seat controls can never be passed through to the aftermarket radio. This input will now only play through the infrared headphones.
9. When the SYNC® is in the off mode state the vehicle defaults into DVD mode. This is so you can get RSE audio & so digital amplifiers will allow you to hear your aftermarket radio in Surround Sound Mode in vehicles equipped with a THX® or Sony® digital amplified system.
10. In vehicles equipped with the Sony® digital amplified systems: after using Bluetooth the factory amplifier may remain faded to the front. If this happens simply put the interface into "SYNC Idle" mode and use the amplifier settings to fade it to the desired setting. This procedure is outlined on page 3 under the "Controlling SYNC® with the PACLCD" section.
11. **If there are issues with SYNC® playing or accessing a USB device, using the SYNC® voice commands or pairing & operating a Bluetooth Phone the MS-FRD1 is not the reason. Please consult the instructions &/or a compatible phone listing for SYNC®. The MS-FRD1 simply passes the information & audio from SYNC® to the aftermarket radio, it has nothing to do with making setting changes that can effect these operations.**

Testing & Verifying Operation

1. Turn ignition on. The red ignition LED inside the interface will turn on & the +12v accessory wire will turn on.
2. Turn on the radio & check balancing & fading. Note: **Sony® & THX® Systems** will not fade as the rear outputs of aftermarket radio do not adjust the amplifier.
3. Pressing the Voice button on the SWC will turn off the rear speakers & allow the SYNC® prompts to be heard in the two front speakers. The SYNC® active red LED will also turn on. When SYNC® disconnects, the radio will un-mute or turn back on & the SYNC® LED will turn off.
4. Turn off vehicle & remove key. RAP will be active & keep the radio on for 10 minutes or until the drivers door is opened.
5. The red ignition On LED & radio will turn off when RAP turns off or the drivers door is opened.

DISCLAIMER: Under no circumstances shall the manufacturer or the distributors of the MS-FRD1 parts be held liable for consequential damages sustained in connection with the MS-FRD1. The manufacture & it's distributors will not, nor will they authorize any representative or any other individual to assume obligation or liability in relation to the MS-FRD1 other than its replacement.

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Sony® is a registered trademark of the Sony Corporation
THX® is a registered trademark of Lucasfilm Ltd**