

### Introduction & Features

The RP5-GM51 interface allows the replacement of a factory radio in select General Motors vehicles with 29-bit LAN v2 20 and 16 pin connector radios. Using this interface will retain factory features such as OnStar, vehicle settings, steering wheel controls (SWC), front and rear park assist and warning chimes when the original radio is removed. The RP5-GM51 also provides data bus driven outputs such as retained accessory power (RAP), vehicle speed sensor (VSS), illumination, reverse trigger and parking brake.

### Important Notes

1. Please make your vehicle settings selections before removing the factory radio for optimal installation time. Once the radio has been removed, the vehicle settings which are normally selected through the factory radio can be accessed and changed by downloading and installing the PAC Vehicle Settings program from <http://www.pac-audio.com/firmware/RP/index.html>.
2. The Voice button can be set to activate the factory OnStar function when pressed for longer than 1.5 seconds or given the ability to control the aftermarket radio. This option can be found in the PAC Vehicle Settings program mentioned above in note one. The default setting for these buttons is to control the factory OnStar. If these buttons are set to control the aftermarket radio, OnStar can still be accessed by using the mirror controls.
3. The radio select rotary switch on the side of the interface must be adjusted to the proper radio setting before plugging the interface into the vehicle (see page 2 for setting chart).
4. The interface comes pre-programmed for all of the vehicles factory SWC functions and does not require programming unless you wish to re-assign the SWC functions, utilize the buttons that have no initial programming or utilize short press long press dual command functionality. The SWC can always be restored to default settings by pressing and releasing the program button on the side of the interface once and waiting 7 seconds for the LED to flash 4 times.
5. The LED will flash whenever a SWC button is pressed.

### Wiring Connection Chart

#### Aftermarket Radio Connections

Yellow	Battery +12v
Black	Ground
Red	Accessory Output
White	Front L + input
White / Black	Front L - input
Grey	Front R + input
Grey / Black	Front R - input
Green	Rear L + input
Green / Black	Rear L - input
Purple	Rear R + input
Purple / Black	Rear R - input

Red / White	Parking Brake Output (-)
Purple / White	Vehicle Speed Output
Blue / White	Not Used
Blue	Not Used
Orange / White	Illumination Output (+)
Green	Reverse Output (+)
Brown Loop	Mute Loop (See installation note 4.)

#### SWC Connector

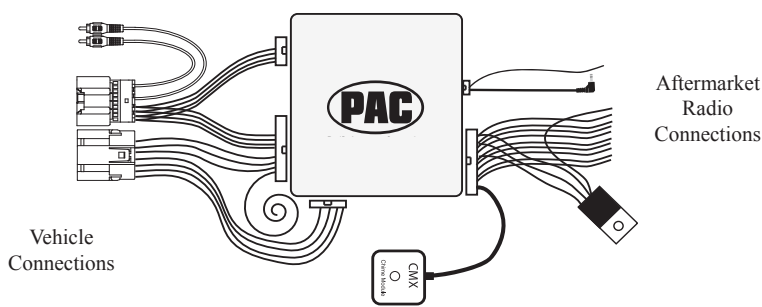
Blu/Yel	Kenwood or Newer JVC
3.5mm Jack	Alpine, JVC, Clarion, Pioneer, Sony, Boyo, Dual, Lightning Audio, Visteon or Advent

#### Vehicle Side Connections

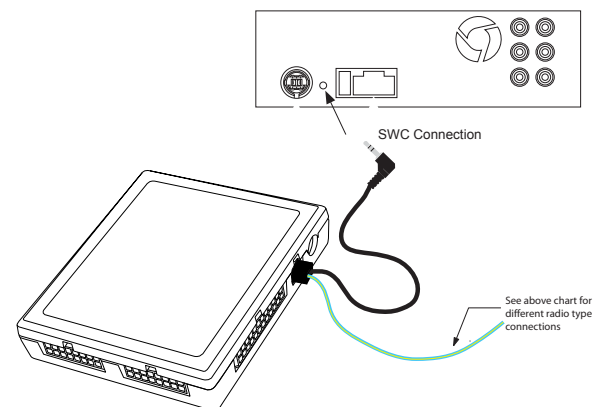
Green/Black	SWC Input
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### Illustration / Schematic

#### Wiring



#### SWC Connection



### Installation Steps

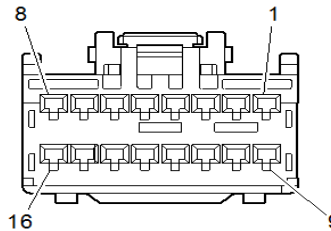
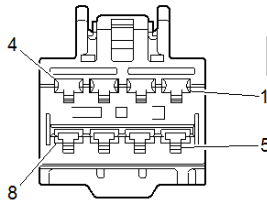
#### SET RADIO SELECT SWITCH



Alpine	JVC	Kenwood	Clarion	Pioneer/Other	Sony	Fusion
1	2	3	4	7	8	9

Other = Advent, BOYO, Dual, Lightning Audio, Visteon,

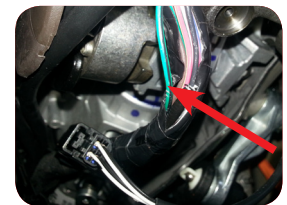
- The radio select rotary switch on the side of the interface must be adjusted to the proper radio setting before plugging the interface into the vehicle.**
- Make all connections as described in the chart on page 1.
- Plug the CMX chime module in if necessary. **PLEASE NOTE:** In order to get the best possible sound out of the CMX please mount it in a place free and clear of any obstructions, preferably as close as possible to the bottom of the dash pointing down toward the floor of the vehicle.
- The Mute loop (if not cut) will turn the accessory output off when an OnStar is activated. If the aftermarket radio has a mute input cut this loop and connect the inside brown wire (next to the blue/white wire) to the mute input.
- Connect the SWC wire according to the chart on page 1 (aftermarket radio **MUST** support a wired remote input).
- If you wish to reassign functions to the SWC follow the programming instructions on the next page.
- If the vehicle has a factory amplifier (Bose) the speaker wires of the interface will need to be extended and run to behind the rear seat and connected to the factory amplifier output wires. The amplifier is located at the bottom center of the rear wall of the vehicles cabin. (See below for the factory wire colors that will be found at the amplifier)



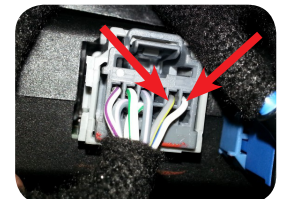
Pin #	Wire Color	Description
1	Dk. Blue / Grey	Subwoofer +
2	Yellow	Right Front Spk +
3	Dk. Blue	Left Front Spk +
4	Red / Yellow	Constant +12V
5	Grey / Black	Subwoofer -
6	Yellow / Black	Right Front Spk -
7	Brown / Dk. Blue	Left Front Spk -
8	Black	Ground

Pin #	Wire Color	Description
4	Brown / Lt. Green	Right Front Tweeter + (UQA Only)
5	Yellow / Dk. Blue	Left Front Tweeter + (UQA Only)
6	White	Right Rear Spk +
7	Lt. Green	Left Rear Spk +
12	Purple / Brown	Right Front Tweeter - (UQA Only)
13	Yellow / Grey	Left Front Tweeter - (UQA Only)
14	Dk. Blue / Black	Right Rear Spk -
15	Lt. Green / Black	Left Rear Spk -

- If you wish to retain the steering wheel control buttons you must hardwire them into the RP5-GM51. The wire you need to connect into can be found by removing the plastic panel located beneath the steering wheel column and accessing the bundle of wires which houses the Green/Black wire (Fig. 1). Once you have located the Green/Black wire in the vehicle you must connect the Green/Black wire coming from the vehicle side connections of the interface to this wire. This is a data signal so to ensure consistent operation please solder the wires together. **DO NOT** cut this wire in half.
- If you wish to retain the factory reverse camera you must solder an RCA end onto the signal wires. The wires you will need can be found at the Human Machine Interface Control Module (HMICM). This module is located behind the lower glove box and can be accessed by removing the 4 - T15 bolts securing the lower glove box to the dash. Once you have located the HMICM in the vehicle, locate the 12 pin connector on the far left (Fig 2.). If the vehicle has the base radio (RPO code IO3) the wires will be in the 8 pin connector located at the radio brain. The wires you will need are located in pins 5 and 6 in either connector. Pin 5- Grey/Yellow - Camera Positive, Pin 6 - White/blue - Camera Negative.



**Fig. 1**



**Fig. 2**

### Default Steering Wheel Control Programming

**IMPORTANT!** The interface comes pre-programmed for the functions listed in the chart below and does not require programming unless you wish to re-assign the SWC functions, utilize the buttons that have no initial programming or utilize short press long press dual command functionality. The SWC can always be restored to default settings by pressing the program button on the side of the interface once and waiting for the timeout.

The Voice button has two functions. Pressing this button for less than 1.5 seconds will initiate the mute command. Pressing this button for more than 1.5 seconds will activate OnStar. When in the factory setting, only the short press function of this button can be reprogrammed. When in the aftermarket setting, both the short press and long press function can be reprogrammed to whatever the customer chooses. This setting can be changed via the Vehicle Settings program located at <http://www.pac-audio.com/firmware/RP/RP5-GM51.html>.

### Default SWC Button Assignments

	Alpine	JVC	Kenwood	Clarion	Pioneer	Sony	Fusion
<b>Volume +</b>	Volume +	Volume +	Volume +	Volume +	Volume +	Volume +	Volume +
<b>Volume -</b>	Volume -	Volume -	Volume -	Volume -	Volume -	Volume -	Volume -
<b>Track +</b>	Track +	Track +	Track +	Search +	Track +	Track +	Track +
<b>Track -</b>	Track -	Track -	Track -	Search -	Track -	Track -	Track -
<b>Voice</b>	Mute / OnStar Activation	Mute / OnStar Activation	Mute / OnStar Activation	Mute / OnStar Activation	Mute / OnStar Activation	Mute / OnStar Activation	Mute / OnStar Activation
<b>Phone</b>	End	Phone Reject	On Hook	End	End Call	Answer/End	Audio
<b>Up</b>	N/P	N/P	N/P	N/P	N/P	N/P	N/P
<b>Down</b>	N/P	N/P	N/P	N/P	N/P	N/P	N/P
<b>Left</b>	N/P	N/P	N/P	N/P	N/P	N/P	N/P
<b>Right</b>	N/P	N/P	N/P	N/P	N/P	N/P	N/P
<b>Check Mark</b>	N/P	N/P	N/P	N/P	N/P	N/P	N/P

### Optional Steering Wheel Control Programming

If you wish to re-assign the SWC functions, utilize the buttons that have no initial programming or utilize short press long press dual command functionality, the interface must be programmed in the specific order shown in the chart below. If you come across a function in the chart that your steering wheel does not have, or you do not want to program, press and release the program button on the side of the interface to skip that function. The LED will flash off and on confirming that you have successfully skipped that function and are ready to proceed to the next one.

### Programming the SWC assignments

- Turn the key to the ignition position.
- Press and release the programming button on the side of the interface. The LED will turn on solid.
- Within 7 seconds, press the button that is to be learned on the steering wheel. The LED will turn off when the button is pressed. **At this point you have two options:**
  - For short press functionality:** Release the button within 1.5 seconds. The LED will turn back on.
  - For long press functionality:** Hold the button until the LED starts blinking. Release the button and the LED will go back to solid.
- If you need to program more buttons, repeat step 3 for each additional audio function on the steering wheel.
- If you come across a function in the chart that your steering wheel does not have, or you do not want to program, press and release the program button on the side of the interface to skip that function.
- Once programming is completed, wait seven seconds. The LED will flash three times indicating end of programming.
- Test the interface for proper functionality. Whenever a SWC is pressed the LED on the interface should blink. If any function does not work, repeat the programming steps

**IMPORTANT!** The Up, Down, Left, Right and Check Mark buttons are capable of being programmed when using our module. Keep in mind that the SWC could control the Driver Information Center (DIC) and the aftermarket radio at the same time depending on the mode that the DIC is in. It is recommended to turn the aftermarket radio off when adjusting the DIC to avoid controlling both at the same time. The controls on the back of the wheel, the Voice button and the Hang Up button will only control the aftermarket radio and not the DIC.



### Optional Steering Wheel Control Programming (cont.)

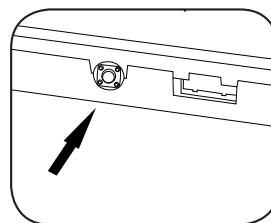
#### Optional Programming Order

Radio	Alpine	JVC	Kenwood	Clarion	Other*	Sony	Pioneer	Fusion
1	Volume +	Volume +	Volume +	Volume +	Volume +	Volume +	Volume +	Volume +
2	Volume -	Volume -	Volume -	Volume -	Volume -	Volume -	Volume -	Volume -
3	Mute	Mute	Mute	Mute	Mute	Mute	Mute	Mute
4	Preset +	Source	Source	Source	Preset +	Preset +	Preset +	Source
5	Preset -	Track +	Play	Search +	Preset -	Preset -	Preset -	Track +
6	Source	Track -	Track +	Search -	Source	Source	Source	Track -
7	Track +	Band/Disc +	Track -	Band	Track +	Track +	Track +	Audio
8	Track -	Preset/Disc -	Disc/FM +	Send/End	Track -	Track -	Track -	Power
9	Power	Select	Disc/AM -	Send	Band	Band	Band	
10	Enter/Play	Attenuation	Answer	End		Reject Call/Source (Bluetooth equipped radios only)	Phone Menu	
11	Band/Program	Phone Receive	Voice Dial			Answer/End Call	Answer Call	
12	Receive	Phone Reject	On Hook				End Call	
13	End	Voice Dial	Off Hook				Voice Activation	
14		Power	Mute (Multimedia units only)					

\*Other = Advent, Boyo, Dual, Lightning Audio, Rockford Fosgate, & Visteon

### OnStar Volume Adjustment for Vehicles w/o SWC

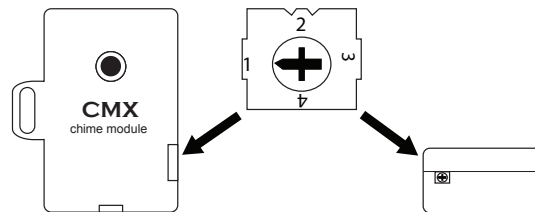
1. If SWC buttons are not present you must use the programming button on the interface to control the OnStar audio level during an OnStar connection.
2. When OnStar is active pressing the programming button will raise the audio level 10 times before returning to the original level.



Press the programming button on the side of the interface while OnStar is active to adjust the OnStar volume

### Testing & Verification

1. Turn the ignition on. The LED on the interface will turn on & the +12v accessory wire will turn on.
2. Turn on the radio & check balance & fade. If the vehicle has a factory amplifier the speaker wires will need to be run back and connected to the factory amplifier output wires.
3. Pressing the OnStar® button on the rearview mirror will turn off the rear speakers and allow the OnStar® audio to be heard in the two front speakers. The OnStar® active LED will also turn on. When OnStar® disconnects, the radio will un-mute or turn back on and the OnStar® LED will turn off. Pressing the Mute/OnStar® button on the steering wheel for 1.5 seconds will also activate Onstar®. When Onstar is activated, both the Voice and Phone buttons on the steering wheel will end OnStar.
4. Verify that all SWC are functioning properly for both the aftermarket radio and OnStar. To adjust OnStar volume, press the OnStar button on the mirror or steering wheel then use the volume buttons on the SWC to adjust the level. If the vehicle is not equipped with steering wheel controls you can use the SWC programming button to raise the volume of the OnStar. The volume will raise a total of 10 steps before returning to the lowest setting.
5. Turn off vehicle & remove key. RAP will be active & keep the radio on for 10 minutes or until the drivers door is opened.
6. The LED & radio will turn off when RAP turns off or the drivers door is opened.
7. Use the 4 position selector switch located on the side of the CMX module to select the best chime output volume for your specific installation. Setting 1 being loudest and 4 softest.



### Product Updates (Firmware)

The RP5-GM51 can be updated with new firmware as it becomes available using the PAC-UP interface updater (sold separately). Please visit [www.pac-audio.com/firmware](http://www.pac-audio.com/firmware) for available updates.