# RP4-GM31

## Introduction and Features

The RP4-GM31 interface allows the replacement of a factory radio in select General Motors vehicles with 29-bit LAN radios. Using this interface will retain factory features such as steering wheel controls (SWC), Warning Chimes, Rear Seat Controls (RSC) and the BOSE amplifier when the original radio is removed. Use of this interface also allows you to program two radio functions to each SWC button, by using short press / long press dual command functionality. The RP4-GM31 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. These instructions only apply to R.1.2.3a.8 or later revisions. The revision info can be found on a small white sticker on the interface and packaging.
2. 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 below for setting chart).
3. The interface comes pre-programmed for all of the vehicle's factory SWC functions and does not require programming, unless you wish to re-assign the SWC functions 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.
4. RSC buttons that are identical to the SWC will mimic the SWC one for one.
5. **To prevent over driven audio** when installing into a vehicle with a Bose system and the aftermarket radio does not have low level outputs, a 4 channel or two 2 channel LOC's are recommended to match the input voltage. We recommend the LP5-4 or two LP5-2 or any other LOC that have the same characteristics as the LP5-4 or LP5-2.
6. **To prevent ground loop or engine noise** when installing aftermarket radios that use a common ground on the RCA outputs, a pair of ground loop isolators (part # SNI-1 or LPGL-2) are required.
7. The LED will flash whenever a SWC button is pressed.

## Wiring Connection Chart

### Vehicle Connector

| | |
|---|---|
| Yellow | Battery +12v |
| Black | Ground |
| Blue | Antenna On Input |
| White | Front Left + input |
| White / Black | Front Left - input |
| Gray | Front Right + input |
| Gray / Black | Front Right - input |
| Green | Rear Left + input |
| Green / Black | Rear Left - input |
| Purple | Rear Right + input |
| Purple / Black | Rear Right - input |

### Interface Connector
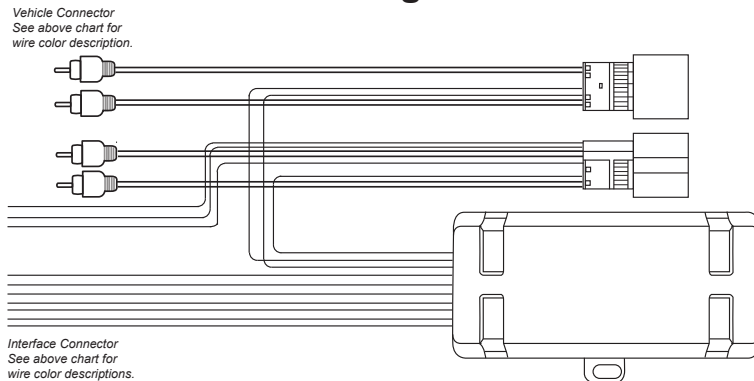
| | |
|---|---|
| Light Green | Parking Brake Output (-) |
| Pink | Vehicle Speed Output |
| Blue / White | Amp Turn On Input |
| Red | Accessory Output (10 amp) |
| Orange / White | Illumination Output (+) |
| Purple / White | Reverse Output (+) |

### SWC Connector

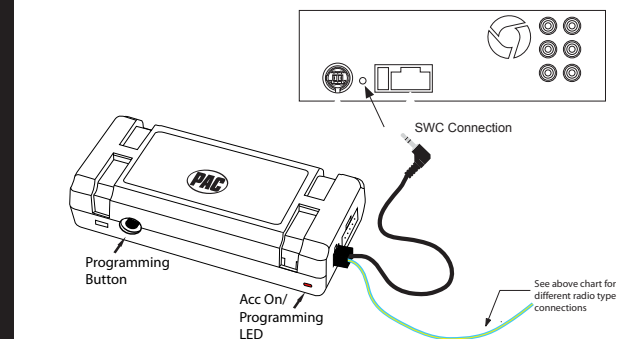| | |
|---|---|
| Blue / Yellow | Kenwood, Newer JVC |
| 3.5mm Jack | Alpine, JVC, Clarion, Fusion, Pioneer, Sony, Boyo, Dual, Lightning Audio, Visteon or Advent |

## Illustration / Schematic

### Wiring



Vehicle Connector
See above chart for
wire color description.

Interface Connector
See above chart for
wire color descriptions.

### SWC Connection



SWC Connection

Programming
Button

Acc On/
Programming
LED

See above chart for
different radio type
connections

**Rev: 3
Date: 120618**

# RP4-GM31

## Installation Steps

**SET RADIO SELECT SWITCH**

| Alpine | JVC | Kenwood / Lightning Audio | Clarion / Nakamichi | Pioneer / Other* | Sony | Fusion |
|--------|-----|---------------------------|---------------------|------------------|------|--------|
| 1 | 2 | 3 | 4 | 7 | 8 | 9 |

***Other - Dual / Axxera, Jensen, Rockford Fosgate**

1. **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.**

2. Make all connections as described in the chart on page 1.

   **If there is a Bose® Audio system present:** Connect the RCA inputs to the aftermarket radios pre-amp output. The audio level will vary depending on the new radios pre-amp output voltage (2 - 4 volts is recommended).

   **If there is not a Bose® Audio system present:** Cut the RCA inputs off and connect the aftermarket radios speaker outputs to the remaining wire according to the chart on page 1.

3. Connect the SWC wire according to the chart on page 1 (aftermarket radio MUST support a wired remote input).

4. If you wish to reassign functions to the SWC, follow the programming instructions discussed later on this page.

## 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 to different buttons. 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.

**Default SWC Button Assignments**

| | Alpine | JVC | Kenwood | Clarion | Pioneer | Sony | Fusion |
|---|--------|-----|---------|---------|---------|------|--------|
| **Volume +** | Volume + | Volume + | Volume + | Volume + | Volume + | Volume + | Volume + |
| **Volume -** | Volume - | Volume - | Volume - | Volume - | Volume - | Volume - | Volume - |
| **Source** | Source | Source | Source | Source | Source | Source | Source |
| **Track +** | Track + | Track + | Track + | Search + | Track + | Track + | Track + |
| **Track -** | Track - | Track - | Track - | Search - | Track - | Track - | Track - |
| **Answer/Voice** | Receive | Receive | Receive | Receive | Receive | Answer/End | N/P |
| **Mute/End** | Mute/End | Mute/End | Mute/End | Mute/End | Mute/End | Mute/End | Mute/End |

## Optional Steering Wheel Control Programming

If you wish to re-assign the SWC functions or utilize short press long press dual command functionality, the interface must be programmed in the specific order shown on 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 programming 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.

**Short Press Long Press Dual Command Functionality**
This feature allows you to assign two aftermarket radio functions to each of the vehicles SWC buttons. It can be used with as many of the buttons as the user likes or none at all. When this functionality is implemented, quickly pressing and releasing a SWC button will initiate the short press command while pressing and holding a SWC button for longer than two seconds, will initiate the long press command. Please note that no long press commands are programmed by default. If you wish to assign dual command functionality to the SWC, please follow the programming steps on the next page.

## Optional Steering Wheel Control Programming (cont.)

**Optional Programming Order**

| | Alpine | JVC | Kenwood | Clarion | Other * | Pioneer | Sony | Fusion |
|---|---|---|---|---|---|---|---|---|
| 1 | Volume + | Volume + | Volume + | Volume + | Volume + | Volume + | Volume + | Volume + |
| 2 | Volume - | Volume - | Volume - | Volume - | Volume - | Volume - | Volume - | Volume - |
| 3 | Mute | Mute | ATT | 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 | Answer ** | Phone Menu | Reject / Source | |
| 11 | Band / Program | Phone Receive | Voice | | End** | Answer Call | Answer / End Call | |
| 12 | Receive | Phone Reject | On Hook | | PTT ** | End Call | | |
| 13 | End | Voice Dial | Off Hook | | | Voice | | |
| 14 | Voice | Power | Mute | | | | | |
| 15 | | | Preset + | | | | | |
| | * Advent, Boyo, Dual, Jensen, Rockford Fosgate & Visteon | | | | ** Jensen & Advent ONLY | | | |

## Programming the SWC assignments

1. Turn the key to the ignition position.
2. Press and release programming button on the side of the interface.
3. 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:**
   - **A. For short press functionality:** Release the button within 1.5 seconds. The LED will turn back on.
   - **B. For long press functionality:** Hold the button until the LED starts blinking. Release the button and the LED will go back to solid.
4. If you need to program more buttons, repeat step 3 for each additional audio function on the steering wheel.
5. 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.
6. Once programming is completed, wait seven seconds. The LED will flash three times, indicating end of programming.
7. 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

## Testing and Verification

1. Turn the ignition on. The LED on the interface will turn on and the +12v accessory wire will turn on.
2. Turn on the radio, and check balance and fade. Note: **Premium Factory amplified Systems** will not fade, as neither the aftermarket radio, nor the RP interface have the ability to control the amplifier's fader.
3. Verify that the factory subwoofer (if present) is playing.
4. Verify that all SWC are functioning properly.
5. Turn off vehicle and remove key. RAP will be active and keep the radio on for 10 minutes, or until the driver's door is opened.
6. The LED and radio will turn off when RAP turns off, or the driver's door is opened.

## Rear Seat Entertainment (RSE); If equipped

1. **Vehicles equipped with an overhead screen only:** In this application, the **GMRVD** must be used in order to feed A/V into the factory screen from an aftermarket head unit (head unit must support A/V out). With the **GMRVD**, A/V will be passed from the aftermarket head unit to the rear screen, and audio can be heard through the headphones. The **GMRVD** will also pass the Auxiliary inputs on the rear of the center console, to the aftermarket head unit.

2. **Vehicles equipped with an overhead screen AND headrest monitors:** In this application, the headrest monitors will function independently from the overhead monitor. Neither video or audio, can be passed to or from the headrest monitors. The overhead monitor will function exactly as described in note 1.

## Technical Support and Product Updates (Firmware)

The RP4-GM31 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 for available updates.

Technical Support
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