



***The JCAL is an electronic OBD2 plug-in device for the following vehicles:***

- 2018-19 Wrangler JL

### ***Feature List:***

JCAL features can be broken into two categories;

- ***Vehicle Settings*** – which are changes made to the Jeep like tire size, gear ratios, or change settings to accommodate other upgrades or modifications. These changes will continue to operate after the JCAL is unplugged.
- ***Live Functions*** – which are functions the JCAL performs live, only while plugged into the OBD2 port.

## **Vehicle Settings**

- Change Tire Size
- Change Gear Ratio
- Change Transfer case LOW ratio
- Enable/Disable TPMS system
- Change TPMS pressure warning limit front/rear
- Enable/Disable Backup camera
- Enable/Disable Cargo Camera input\*
- Enable/Disable CD (wired audio) input\*
- Enable/Disable TravelLink/XM traffic&weather
- Change Daytime Running Lights (DRL) region (type)
- Change DRL location
- Enable/Disable DRL Dropout function
- Enable/Disable factory fog lights
- Enable/Disable Fog Light Dropout (when Fogs shut off while High Beams are on)
- Enable/Disable Factory Halo lights
- Enable/Disable One-touch lane change
- Change 3rd Brake light type (std/LED)
- Change Fog light type (std/LED)
- Change Taillight type (std/LED)
- Change Front Turn Signal type (std/LED)
- Enable/Disable Trailer Tow setting
- Enable/Disable Aux Button settings
- Enable/Disable Blind Spot detection (if hardware added or removed)
- Disable Electronic Sway Bar (if removed from vehicle)
- Disable Front Axle Disconnect module for axle swaps
- Disable Front and Rear Lockers for axle swaps
- Disable Electronic Steering Pump for hydraulic steering conversions
- Change cluster splash screen Wrangler/Sahara/Rubicon
- Enable/Disable PANIC button on remote
- One-touch return-to-stock – Quick “unmarry” function returns all vehicle settings back to stock.

## **Live Functions**

- AutoStopStart disable – can automatically turn off the auto stop start system every time you start the vehicle
- AutoTracKill – can automatically turn off the traction control every time you start the vehicle
- Can disconnect sway bar in 2WD up to 30mph
- Can use backup camera and added cargo/front/undercarriage camera or media player at any speed
- TurnCAM – automatic backup camera when turn signals are used (8.4 uconnect only)
- AP Kill- overrides the AutoPark system so the vehicle can be moved with the door open
- Dark Mode- Turns off all exterior lighting and dash/radio/shifter lights while parked with engine running.
- Light Show mode – 6 preset and 3 make-your-own Light shows that flashes all the exterior lights, perfect for car shows/first responders/off-road visibility. Control from Key Fob or steering wheel buttons. Can be enabled for in-motion use for parades, off-road and legal police/EMS.
- Axle Locker control (Rubicon) – Engage lockers in 2WD and 4Hi on demand.
- Sway Bar control in 2WD with automatic re-engagement at 30MPH
- SwayKill - Disable sway bar on demand in any drive mode, any speed.
- TC Kill – Turns off traction control, stability control and ABS.
- Hood Alarm – When the vehicle theft alarm is armed, monitors hood activity and will sound the alarm and flash light shows if opened.
- Cooldown mode: Turn engine fans on demand when the ignition is on, engine not running
- Line Lock: Can lock front brakes for an easy burnout
- Rock Crawl: Can lock all four brakes by pressing steering wheel buttons to hold the vehicle still, especially helpful when off-road.
- Winch Mode: Raise idle to 2000 RPM with a simple button press.
- Button Mapping: Use cruise up, down and right buttons as quick-access to some of JCAL's functions, when cruise control is off.
- Clear CELs – Reset that pesky check engine light. Good when you have mods that set the light and you know exactly why.
- 0 to 30 and 0 to 60 Timers – Displays 0-30 or 0-60 times on EVIC display
- Firmware updates – new firmware is available periodically, always free and posted to the Z Automotive website. Use ZPU programming utility, also on the website, to load the firmware.

***Use of extra video inputs requires wiring video source(s) to radio. Special adapter harness required, sold separately. Some features are included yet not fully tested as the platform is so new.***

## Installation

- Installation is a two step process; First, the SGW module above the OBD2 diagnostic connector needs to be unplugged, and the SGW bypass block needs to be plugged in its place.
- Simply locate the SGW and unplug its two connectors by pressing the tab with your index finger and gently pulling straight down on the wires.



- Once the SGW bypass is plugged in, you can plug the JCAL into the OBD2 diagnostic port under the dashboard, on the left side.
- The JCAL does not need to be plugged in for any of the features in the Vehicle Settings to remain operational.
- The JCAL can be left plugged in, as many of its features (Live Functions) only work when plugged in. The JCAL will go to sleep by itself, 30 seconds after the car shuts down.

## Vehicle Settings

This section explains how to use the JCAL to change the vehicle settings for feature activation.

### **Navigating the menus:**

For all functions involving the dash (EVIC) display, the EVIC screen first needs to be in a state where it's showing the AUDIO screen. Use the left and up/down arrows to set the EVIC display like this.

Once the display is in this state, press and hold the steering wheel LEFT ARROW, and tap the Cruise "CANCEL" button to enter the settings menu.

Pressing LEFT ARROW and CANCEL will advance through the menu items. To change/select a setting, press and hold LEFT ARROW and tap the Cruise "ON/OFF" (center) button. Advance through the menu slowly.

You can exit the menu quickly and safely by holding the left arrow and pressing the cruise RES button. If you made any changes in the setup menu that affect the radio, be sure to scroll to "full reboot?" and "select" it.

**Some settings require two sleep/wake cycles. The quickest way to do this is to turn the ignition off, open and close the driver's door. Wait about 60 seconds AFTER the dash goes dark, then re-enter. Do this twice.**

**The setup menu is accessed with the ignition ON but engine NOT running.**  
The menu items are listed in the order in which they will display.

**Light Show:** Though this is not a setting, it's in the settings menu so that the light shows can be activated also when the engine is off – this will work in ACC mode as well.

**Clear CELs:** Though this is not a setting, if selected, this will clear a check engine light and diagnostic codes stored in the PCM, TCM, ABS, and AWD modules.

**Marry/Unmarry:** To advance to any of the vehicle settings, you will first need to "Marry" the JCAL to the vehicle. Simply select this option, and the JCAL will download your Jeep's current (stock) settings. This takes approx. 15 seconds, do not disturb this process. Once complete, you will be able to advance to the settings choices. Select "unmarry" to return the vehicle to stock. A couple cycles of the vehicle being started then allowed to sleep may be needed for all setting changes to take place. Any changes to the radio settings will require a "full reboot" to be selected.

**Submenus:** Once married, you can advance through several sub-menus. Select a submenu using the method described above, which depends on vehicle type.

## ***Submenu Perf – sets the performance-based options:***

**Set Tire Size:** Use this setting to change the calibration for tire size. Use the left arrow and cruise +/- buttons to raise or lower the value, then select it (left arrow and cruise on/off) to save the new setting.

**Set Gear Ratio:** Use this setting to change the calibration for axle gear ratio. Use the left arrow and cruise +/- buttons to raise or lower the value, then select it (left arrow and cruise on/off) to save the new setting.

**Set Transfer Case LOW ratio:** Use this setting to change the calibration for 4LOW gear ratio. Use the left arrow and cruise +/- buttons to raise or lower the value, then select it (left arrow and cruise on/off) to save the new setting.

## ***Submenu Tire – sets TPMS options:***

**Set TPMS:** Turn the tire pressure monitoring system on or off.

**Set Tire Pressures Front/Rear:** Change the TPMS warning pressures. Use the left arrow and cruise +/- buttons to raise or lower the value, then select it (left arrow and cruise on/off) to save the new setting.

## ***Submenu Radio – sets the radio-based options:***

**Set Backup Camera :** If factory backup camera is deleted, this setting will disable it.

**Set Cargo Cam:** This will enable the “cargo cam” selector on the “controls” screen. Useful for front cameras.

**Set DVD\_CD1:** This setting adds the CD input on the RA3/RA4 radio, for use as an aux input, particularly useful if adding a media player or DVD player.

**Set Travel Link:** This setting adds the ability to disable SiriusXM Travel Link, which turns off the weather pop-ups. Also disables SiriusXM Traffic information.

## ***Submenu Lighting– DRL and other lighting options:***

**Set DRL Type:** Choose USA (on but selectable), Canada (on all the time), or off.

**Set DRL Location:** Choose which lights to use as DRL's (results vary with vehicle model) – Dedicated DRL, SRT DRL's, Turns, Fogs, Hi beams or Low beams.

**Set DRL Dropout:** This setting is enabled by default, making the DRL turn off when using a turn signal. Turning this OFF will keep the DRL on even when a turn signal is in use.

**Set Fog Lights Enable:** If factory fog lights are added, this setting will enable them.

**Set Fog Dropout:** This setting is enabled by default, making the Fogs turn off when using high beams. Turning this OFF will keep the fogs on even when high beams are in use.

**Set Halo Enable:** This setting is to disable or enable factory Halos.

**Set LED CMHSL:** This setting is to configure the vehicle for LED 3rd brake light.

**Set LED Fogs:** This setting is to configure the vehicle for LED Fog lights.

**Set LED Tails:** This setting is to configure the vehicle for LED taillights.

**Set LED Front Turn:** This setting is to configure the vehicle for LED front turn signals.

**Set Trailer Tow:** This setting is to configure the vehicle for trailer tow package.

### ***Submenu Off-Road:***

**Set Sway Bar:** If the Electronic Sway Bar has been removed, you can use this setting to delete the warnings. You can also use this feature to be able to drive with the sway bar disconnected at any speed or 4WD range. Simply shift to 4WD, press the button to disconnect the sway bar, and once it's disconnected, enter the JCAL settings menu and set the Sway Bar off. It'll remain disconnected until you set it on again.

**Set EPSteer:** This setting is used if you deleted the factory electronic steering pump for a hydraulic pump.

**Set LOCKER:** This setting is used if you deleted the factory axle lockers. You can delete front only, or both. If the front locker is deleted then the front axle disconnect is deleted as well and needs to be disabled as well.

**Set Front Axle Disconnect:** This setting will delete the factory Front Axle Disconnect for those that have done axle swaps. This setting should be used in conjunction with the Locker setting.

### ***Submenu Other:***

**Set AUX:** This setting is to configure the vehicle for AUX button package.

**Set Blind Spot:** This setting is to configure the vehicle for blind spot detection package.

**Set Belt ding:** This setting is to delete the seat belt reminder chime. The reminder icon will remain on the dash. Always wear your seatbelt!

**Set Splash:** With this setting you can choose the cluster splash screen: Sport (Wrangler), Sahara, and Rubicon.

**Set Panic:** With this setting you can choose whether the PANIC button on the keyfobs will be enabled or not.

**Firmware Version Display:** Shows the current JCAL firmware revision.

**Full Reboot:** If selected, will reset vehicle modules and the radio twice. This takes 2.5 minutes to complete, **and should be performed after any Vehicle Settings that affect the radio are changed** – the radio will reboot twice in this time, the dash will reset, and when it's finished, **the red security dot on the dash will turn on**. Once complete, shut off the vehicle, open and close the driver door and wait for a minute to be sure the dash turns off.

## ***Live Menu Settings***

This section explains how to use the JCAL's live functions – these are activated with the same button presses as the Settings Menu, but while the engine is RUNNING. These features will only work if the JCAL remains plugged in. Please note that Trac Kill, and AutoStartStop kill will be enabled after initial JCAL setup.

**Light Show:** This is one method of activating the light shows. Selecting this will activate the first show, unless ZPU was used to change the startup show. There are 9 light shows – you can toggle through all 9, then back to OFF.

**Set In-Motion Nav:** If set ON, this adds the ability for address info to be entered into the navigation system while vehicle is moving. This is for the PASSENGER to use. It may be illegal for the driver to use the navigation system to enter information while the vehicle is in motion. On RA3/RA4 radios, it will also allow the text feature and switching drive mode settings while in motion. It is recommended to leave this setting OFF, enabling it only when you need to use it. This will automatically be disabled if TurnCAM is enabled.

**Trac Kill:** If enabled, will effectively “press” the traction control button for you, every time the vehicle is turned on.

**SS Kill:** If enabled, will automatically disable the auto-start-stop system every time the vehicle is turned on.

**AP Kill:** If enabled, will automatically disable the autoPark system every time the vehicle is turned on.

**TurnCAM:** If enabled, will automatically turn on the backup camera if the turn signals are being used. When this is enabled, In-motion nav will be disabled.

**Dark Mode:** If enabled, turn off all exterior lights and dash, radio, and shifter lighting. Selecting again, advancing to next menu item, pressing “screen off”, or driving over 5 mph will automatically cancel this mode.

**Video:** If selected, will turn on backup camera input.



**0-30 Timer:** When the vehicle is stopped, this display will change to "start 30". As soon as the vehicle starts moving, the display will change to "go to 30" and the timer starts. When the vehicle reaches 30MPH, the time will be displayed.

**0-60 Timer:** When the vehicle is stopped, this display will change to "start 60". As soon as the vehicle starts moving, the display will change to "go to 60" and the timer starts. When the vehicle reaches 60MPH, the time will be displayed.

**Display JCAL Firmware Revision:**

Displays the JCAL's current firmware version: "TZ JL: x.x.x." (ie "TZJL:11.0.6")

## ***Non-Menu Live Functions***

The JCAL has other live functions that are not accessed via a menu.

### **Light Shows**

The JCAL comes pre-configured with 6 light shows out of the box, plus 3 "make your own" light shows that you can configure with the ZPU utility. There are two ways to control the light shows on the JCAL:

**Keyfob:** The light show can be turned on by pressing unlock-unlock-lock-unlock from the key-fob. This will start the first light show in the sequence (depending on which show it's configured to start with). Pressing unlock again will advance to the next enabled show. Pressing lock will turn off the light shows. You may lock the vehicle while the shows are on by pressing the button on the door handle or using the key.

**Dash Menu:** You can start the show by setting the dash to "Audio" mode, then press the left arrow and tap cruise CANC button. "Lightshow?" will display on the dash. Hold left arrow and tap cruise on/off (center) button to turn on the first light show in the sequence. Again to advance to the next show. Exit the menu (left arrow and CANC) to turn off the show.

**Sway Bar in 2WD:** Press the Sway bar button while in 2WD and it will disconnect or re-connect as if it were in 4WD. It will automatically re-connect at 30MPH and disconnect when the Jeep comes back to a full stop. See "SwayKill" in Button Remap section for full sway bar control.

**Locker Control:** Press the REAR locker button in 2WD/4HI or the FRONT/REAR button in 4HI while under 10mph and lockers will engage. Press the Locker OFF button to disengage lockers. This is the same method to operate the lockers as if in 4LO. See LOCKERS in Button Remap section for full locker control

**Cooldown Mode:** With the ignition on but engine not running, press the right arrow and cruise cancel button at the same time to turn the engine fan on High. They will also turn off automatically if the battery voltage drops below 11V.

**Winch Mode:** With the engine running, press the left arrow and cruise RES buttons at the same time. The engine will rise to 2000 RPM. There may be a few seconds delay before it changes. It will NOT raise if you touch the accelerator pedal, and will cancel if you do.

**Hood Alarm:** Arm the factory Vehicle Theft Alarm. If the hood is opened while armed, the alarm will sound and the JCAL Light show will be invoked. To turn off, press the PANIC button on the keyfob to turn off the alarm, and the LOCK button to turn off the light show.

**Line Lock:** While in 2WD, press and hold the left arrow and cruise set(+) buttons. Continue to hold and pump the brakes twice, firmly. The Jeep will stay held using only the front brakes while you press on the accelerator to do a burnout. "LineLock" will be displayed in the cluster.

**Rock Crawl (patent pending):** Press and hold the left arrow and cruise set(-) button, and pump the brakes twice. The Jeep will hold using all four brakes while you can work the pedals to apply torque, and release the buttons when you're ready to move. "RockCrawl" will be displayed in the cluster.

**Full traction control disable:** Press and hold the traction button for 5 seconds to fully disable TC and ABS. Shut off and re-start Jeep to re-enable.

Force Backup camera: Double tap the "mute" button to switch to backup camera (8.4" and 7" only)

**Button Remap:** This function allows the assignment of "hotkeys" for quick access to some of the JCAL's functions. The cruise +/-/RES may be used for this function. While the dash is in Audio mode, press and hold the RIGHT arrow and press the button you'd like to remap. The choices are: Any of the 8 light shows, backup cameras, line lock, rock crawl, TC kill, Cooldown, Front/Rear/Front+Rear Lockers, SwayKill. Keep in mind that not all functions pertain to all vehicles. These remap buttons will only program and operate while Cruise Control is OFF. When Cruise is on, they will operate as normal cruise control buttons. For TC Kill, a vehicle restart is required to bring the system back to normal. For Lockers, the normal Locker off button disengages the lockers.

**Partial Reboot:** Press left arrow and cruise RES with the ignition set to RUN and engine is not running, and the JCAL will reset several systems including the PCM (engine adaptives), RF Hub, Instrument cluster, ABS, BCM.

## Configuration

Configuration of the JCAL is accomplished by using the supplied USB cable connected to a PC, using the ZPU Programming Utility.

The ZPU User Guide explains how to install ZPU and how to perform firmware updates. Please see the accompanying "Light Show Configuration Guide" to configure your JCAL's light show options.

SYMPTOM	CAUSE	SOLUTION
No menu in EVIC	EVI And C display has to be in state where it can display radio station name	Set EVIC so it's showing radio station name. This would be the the "Audio" menu on JL Dash screen
Changed a setting and it didn't take effect	Needs a sleep/ wake cycle and/or radio reboot	See the instructions above in the "settings menu" section, about sleep cycling and radio rebooting.
Changed gear ratio and „service AWD“ is showing	Incorrect gear ration chosen or setting didn't initialize	Vehicle needs a sleep cycle and short drive to fully initialize.

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