

Tesla-Link – Operating Guide

Introduction

This application allows you to see and control some feature of your Tesla vehicle through your Garmin device. The features documented in this guide is for version 7.14.0 of the application.

Caveat 1: You need to be in proximity of your phone and that phone must have Internet access for the application to work as the communication to the Tesla servers are done through your phone.

Caveat 2: The application doesn't support Multi-Factor Authentication (MFA or also known as 2FA) to login. There is a work around that will be explained later in the "Application's Parameters" section. This is a limitation of Garmin, not of this application.

First Time Use

Although the application allows customizations, to start using it, all you need to do is to install it on your device. When you launch it the first time (directly or from the Glance view), it will ask you to login through your phone. Under normal circumstances, that's the only time it should ask you again to log in, unless you change your Tesla account password, reinstall the application or possibly update it.

When launched, depending on your watch capabilities, you might be asked to press the Start button or touch the screen before the main view as seen below is shown. If you're vehicle isn't awake, you'll be asked if it's Ok to wake it. This is to prevent the inadvertent waking of the vehicle by landing on this widget by mistake.

Touch devices



Button devices



The screen is divided in four quadrants. We will call them the upper left, upper right, lower left and lower right quadrant in this guide. On a touch screen device, you activate the feature in the quadrant by simply touching it. On a button-operated devices, the buttons don't follow Garmin's standard button convention but that's to make it faster to operate. The "Select" button acts on the upper right quadrant, the "Down" button acts on the lower left quadrant, the "Up" button acts on the upper left button and the lower right quadrant is accessed through the "Menu" button. On many devices, this is activated by

holding the “Up” button for a second. On touch and button devices, the “Cancel” button closes the application. You can also swipe right on touch device to close the application.

All quadrants but the upper left one has a fix use that is depicted by the icon in the quadrant. For the upper left quadrant, beside being dynamic and showing what action it is programmed to perform by an arrow pointing at that item (like above, the action is to open the frunk), it also shows the opened or closed status of the frunk (like the above right image showing the frunk opened), trunk, port, and windows (exclamation point across the vehicle). You alternate between the action to be performed by selecting *Alternate Frunk/Trunk/Port* from the menu.



There is also a “pop-up menu” action depicted by a question mark over the vehicle. That mode allows the interaction with all the items above, including venting the windows, through a pop-up menu asking which item to operate on.



Unlike the other actions, however, when you select an item from that menu, it is acted on immediately, without any confirmation.

For the single action items, to prevent inadvertent presses, it will ask to confirm the operation before being executed.

For safety, the icon will auto-switch to a moving vehicle if the vehicle is not in Park.



Touching the upper left quadrant or pressing the “Select” button will activate/deactivate the climate. By limitation of Tesla’s API (Application Programmer Interface), the mode chosen will be whatever the vehicle was left in. The icon will turn blue when it’s actively cooling and red when actively heating. Each of the blades of the fan can have a *heat wave* icon in them as shown on the left. The upper right one means the battery is preheating. The upper left one means auto defrost is On. The lower left means the rear defroster is On. The lower right one will show heat wave if *max defrosting* is On or a fan if *defog* is On. The image on the left depicts what is usually shown when it’s cold and the quadrant is touched/activated while climate is in Auto mode.



Touching the lower left quadrant or pressing the “Down” button will lock/unlock the doors. If a door is left open, an exclamation point will show up below the opened shackle piece.

Touching the lower right quadrant or pressing the “Menu” button will pop up the *menu*. Whatever shows up in that *menu* is selectable through the application’s parameters. You can have from one to sixteen commands (max allowed by Garmin) in that menu. You have 23 commands to choose from, which will be explained later in the *Commands Available* section of this guide.

Waking the Vehicle

If the vehicle is asleep when you launch the application, a ‘Should I wake’ confirmation will be shown.



If you select *Cancel*, you'll be brought to the *Select a vehicle* pop-up in case you want to select a different vehicle to control without waking this one.

If you instead select *Confirm*, the screen will be changed to a “Waking vehicle” followed by up to two counters below it. The right one is the number of seconds elapsed since the wake command was sent and the left one is the number of times a 408 error was received. That error code means the vehicle is unavailable. Most likely because it's still waking up and hasn't communicated with Tesla's servers yet. You might see these counters when sending commands too.

Vintage View

Beside the default view, there is also a vintage view, which was the first view this application was designed for, as it was designed for button-operated devices.



There is far less information displayed in this view. What is shown is quite self-explanatory. This view is not touch compatible, except to show up the *menu* by pressing anywhere on the screen. The buttons operate identically to the default view. You switch to that view by selecting “Toggle View” from the *menu* (if included as a command in the *menu*).

Both views also show some common information on screen. The circle around the perimeter indicates the percentage of charge graphically. The green portion is the current charge level, the dark grey tick mark is the charge level to reach, and the lighter gray segment is the unused charge level of the battery. Below that circle at the top is shown the currently selected vehicle name.

Additional Information Displayed on the Default Screen



Just below the vehicle name is a grey circle. If it's filled with a red dot, it means Sentry is On. If not, then Sentry is Off.

If scheduled departure is set, it will be displayed in the middle of the screen as shown.

Just between the lower two quadrants, there is a *spinner* that is helpful to see if the device is communicating with the vehicle. That *spinner* will alternate between '+' and '-' if enhanced Touch (see below) is enabled and '/' '\ ' if not. Every time the vehicle state info is received, it alternates between these two symbols. If instead an error is received, for each successive error, it will alternate between '?' and '¿'. In addition, if a command (like Unlock door) is queued and can't be transmitted right away, a 'W' will be displayed right after the *spinner*.

At the bottom of the screen, it displays the current State of Charge (SoC), followed by a '+' if it's actively charging. The configured maximum current the charger can draw and the inside temperature.

Additional Data Screens

By swiping left on the screen or selecting *View data screen* from the menu, it will switch the view to the Data Screen view and disable the default action of the buttons and touch points on the screen. In this view, it will display information about the Charge state. By swiping again or pressing the Menu button, it will display information about the Climate state. Repeat for Drive state. More data within a screen might be available by swiping or pressing up or down in those views. You get out of these views through the Back button, swiping right or swiping left once at the drive state.



Media Control view – Allows the control of the vehicle's media player through your watch.



Accessed through swiping up on the screen on touch operated watch with Glance support or by selecting *Media Control* in the menu.

For touch operated watches, you can skip back/forward, increase/decrease volume and toggle Play/Pause by touching the corresponding icon.

For button operated watch, you toggle between Skip control and Volume control by the pressing Menu button. You decrease volume/skip back with

Page Down button, increase volume/skip forward with the Select button and toggle Play/Pause with Page Up button.

Back button/gesture takes you out of the Media Control view

The title of the song currently playing is shown at the top of the screen. Because of the sheer size of data returned by the vehicle, it can be several seconds before a title change appears.

The current volume level is shown between the volume controls. There is also a lag when adjusting the volume.

If your watch supports Vibrate, once the command is acknowledged by the vehicle, the watch will vibrate. It takes a few seconds for the command to be acknowledged so wait, otherwise a red -101 will show up on the bottom on the screen saying the Bluetooth queue is full.

If an error is received, it will show in red on the bottom of the screen.

Additional Features for Touch-Enabled Devices

If your device is touch enabled, there are other ways to interact within the application.

Enhanced Touch: These are set in the application's parameters, which will be explained below. The first one is Enhanced Touch. This option adds more touch points to the screen. It defaults to Enable.

The first touch point is the vehicle's name. Touching this area will pop up a list of vehicles that you have access with your account.

The second touch point is that circle below the vehicle name. Touching it will toggle Sentry On/Off.

The third touch point is the center of the screen. Touching it will pop up a time menu where you can schedule your departure (it's all days of the week) or disable it. It toggles between both. If the time is shown, it disables it. If it's not shown, it sets it. In the screen above, the departure is scheduled for 6 am.

The last two touch points are at the bottom of the screen, one towards the left where the SoC is displayed and the other one towards the right where the temperature is displayed. Through the application's parameters, you can select any of the following for each of these two touch points:

- Set Maximum State of Charge
- Set Maximum Charge Current
- Set Inside Temperature

Hold Action: Each one of the four quadrants can perform a specific action when it's touched for a second or more (i.e., held down). These actions are configured in the application's parameters. When held, if your device supports vibration, it will shortly vibrate to indicate the action was registered. By default, these hold actions are all disabled.

Upper Left quadrant has four options: *Open Frunk*, *Open Trunk*, *Open Charge port* and *Vent*

Upper Right quadrant has one option: *Max Defrost*

Lower Left quadrant also only has one option: *Honk*

Lower Right quadrant has two options, *Homelink* and *Remote Boombox*

Glance mode

For devices supporting *Glance*, the application will be added to the Glance view. The look of the glance view is dependent on the size of your screen and amount of memory your watch has for the background process. As of this time, there are two sizes, 32,768 bytes (32 KB) and 65,536 bytes (64 KB). You can see how much memory your watch has here: <https://developer.garmin.com/connect-iq/reference-guides/devices-reference/>



When you first start your device, the glance view might request you to launch the application (widget) so it can establish communication with Tesla's servers. Once the communication is established and data is received, the glance will show information about your vehicle.

Glance data is limited by Garmin to a poll per 5-minute interval, so if Supercharging, don't rely on this to know when the SoC has been reached. Beside the vehicle name, information about the vehicle will be displayed if the vehicle can be accessed (i.e., not asleep).



What is shown is the last known SoC, if it's charging (a '+' sign after the %), its range (either Rated, Estimated or Ideal – see Settings below) and the time the query was taken. On bigger watches, a third line will also display the inside temperature and if Sentry (S) is On/Off and Preconditioning (P) is Set to On/Off. If the vehicle is in motion, it will display "Driving" instead of S and P.

If the vehicle is asleep, on smaller watches, a 's' will be added after the SoC. On bigger watches, a third line will be shown with 'Asleep' on it instead of the 's' and if Preconditioning was On or Off before going to sleep. On 32 KB watches, a 408 error is enough to think the car is asleep, although a bad communication can also generate 408 errors. On 64 KB watches, it will query the vehicle state to get a better representation of its state. It's common though for vehicles to show error 408 for a few iterations until Tesla's servers register the vehicle as being asleep.



If the watch receives an error instead of valid data, a '?' will be added after the SoC. On bigger watches, an informative message will be shown on the third line instead.

On watches with 64 KB of memory, once the token expires (every eight hours), it will auto generate a new one. On 32 KB watches, you'll need to launch the widget to get a new token and it can take up to five minutes before new data is shown.

The main view of the app also refreshes the Glance data so, once back at the glance view, the data shown is recent.

Complications

If your watch support *Complication* (needs CIQ 4.2.0 and above), the app can be launched from other apps or watch faces that also supports *Complications*. The following data might be required by the other app/watch face to tie to the app:

ComplicationID: 0

ShortName: TeslaLink

LongName: Tesla-Link

When launched from another app or watch face, the default action for the *Touch Hold action for upper left quadrant* (see above) will be performed, but not before asking first. Waking up the vehicle will also be asked if asleep.

The application will either send the batterie's SoC to other apps and watch faces through *Complication* or if "Send enhanced Complications to Crystal-Tesla" is checked in the Settings (see below), it will send the SoC, Sentry state, Preconditioning state and inside temperature to the Crystal-Tesla watch face. That way, if your favorite watch face supports *Complications* from third party, you should be able to see its charge on it. Keep in mind that the SoC can only be sent when the vehicle is awake, the watch isn't actively running an application and at intervals of 5 minutes.

Application's Settings

The application can be customized through the application's settings on your phone. The settings might reset to their default value after an application update if new settings were introduced in that update. That's forced by Garmin, and I have no control over it, sorry.

The following is an explanation of each of these options.

App Version: It's a non-editable field showing the current application version. Make sure you check for updates to get the latest features and bug fixes.

Enhanced Touch Experience: Selecting this checkbox (on by default) will activate the enhanced touch hotspot explained above.

Use Touch (for devices with both buttons and touch screen): By default, on those devices, the touch screen is active. By disabling this, the buttons are activated and the screen interaction is limited to the activate the *menu*. Both buttons and touch can't be used at the same time.

Quick Return to Main Screen: Be default, when a command is sent, before the control is given back, the application waits to receive the latest vehicle state so the screen shows the updated status. For example, when issuing an Unlock command, the control is given back when the new state of the vehicle with the vehicle showing Unlock is received. This can take a few seconds to appear. By selecting this checkbox, the control is given back as soon as the command is sent. Allowing you to send more commands immediately. In the example above, it can take a few seconds before the screen shows the Unlock icon.

Enable vehicle name scrolling: When checked, if the vehicle name is too long to fit on the screen, it will scroll to display the whole name. This has no effect on Glance line scrolling, which is always active. This is just for the main screen.

Use a smaller font in Glance: If selected, the text in the Glance view will be smaller. Benefit of this is the text might fit without needing to scroll and there might be enough room for a third line of data.

Scroll text until the edges have cleared: When enabled, Glance when located at the top of the screen should be able to scroll further so the whole line can be seen. This option is more for people that have the app Glance defaulted to the top or bottom Glance position. That way, you won't need to move it to the center of the watch to see it in full. Since there are no way of knowing into which slot the Glance is, it also means that while in the center, it will keep scrolling past the end of the lines for a bit (on round watches).

Warn if the phone is not connected to the watch: If set and the phone is too far from the watch, during a background process (every five minutes) and if the watch has at least 64 KB of background memory, it will popup over the watch face "Forgot phone?". If you say 'Yes', it launches the Tesla-Link app (which will simply display "Phone connection required"). If you say "No", it will return to the watch face. It's a "hack" to let you know that you might have forgotten your phone in your vehicle.

Send enhanced Complications to Crystal-Tesla: If your watch support *Complications* and you're using Crystal-Tesla as your watch face, the watch face will receive SoC, Sentry state, Preconditioning state and inside temperature from this app instead of getting this info by itself, so you won't need to deal with tokens and will also draw less power since no background task will run to retrieve that data.

Battery range to show: You can select between Rated, Estimated, or Ideal as the range to show in the Glance view and the Charge Data Screen.

Default option for the Upper Left quadrant: Options here were explained above. They are *Open Frunk*, *Open trunk*, *Open Port* and *PopUp Menu*. For legacy reason, default is *Frunk*.

Has a Powered Frunk: If this option is checked (default is unchecked), Once the Frunk is open, instead of displaying 'Frunk already opened' if activated again, it will display 'Close Frunk'.

For Screen Bottom Left: As explained above, the options are *Set Charging Limit*, *Set Charging Amps* and *Set Temperature*. Each of these will be explained below.

For Screen Bottom Right: As explained above and same as *For Screen Bottom Left*.

Touch Hold action for upper left quadrant: Options are *Disable* (default), *Open Frunk*, *Open Trunk*, *Open Port* and *Vent*.

Touch Hold action for upper right quadrant: Options are *Disable* (default) and *Defrost toggle*.

Touch Hold action for lower left quadrant: : Options are *Disable* (default) and *Honk*.

Touch Hold action for lower right quadrant: Options are *Disable* (default), *Homelink* and *Remote Boombox*.

Menu order: This field is a "comma-separated value" field representing the commands to be available in the Menu and in what order. You can find the commands and their associated number below.

It defaults to 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25 which is all the commands.

API Refresh Token: This is optional, unless you have MFA activated in your Tesla Account. You can use an application like Tesla Token (available in both the Play Store and App Store) to generate a **Refresh** token that you enter here. If this is set, theoretically, you should no longer be asked to login on your phone unless you changed your password.

Location of Tesla's API Servers: Defaults to *owner-api.teslamotors.com*. Only needs to be changed when in mainland China. There, it's *owner-api.vn.cloud.tesla.cn*.

Location of Tesla's Auth Servers: Defaults to *auth.tesla.com*. Only needs to be changed when in mainland China. There, it's *auth.tesla.cn*.

Commands Available

The following is the available commands, their corresponding Menu number and a brief description:

1 - Defrost Toggle: Toggles Max Defrost On or Off. When toggling On, it will also turn on the climate but when toggling off, it does NOT turn off the climate. That's to allow the vehicle to remain warm after the frost/snow has melted from it.

2 - Seat Heat: Allows to set individually or by groups (Front, Rear and All) the seat's heater from Off, Low, Medium, High and Auto. The Rear and All options are only available if the vehicle is equipped with rear seat heaters. Climate does not need to be On for the seat heaters to be On.

3 - Steering wheel heat: Turn the steering wheel heater On or Off (must be equipped with one). Unfortunately, climate has to be On for this option to work for some reason. Also, the Low, Medium, High and Auto endpoints are not available through the API.

4 - Set charging limit: Sets the maximum State of Charge (SoC) to the value specified (from 50% to 100%).

5 - Set charging amps: Sets the maximum charging current (in amperes) to the value specified (from 5A to the maximum the vehicle can handle while AC charging). Has no effect while fast (or DC) charging.

6 - Start/Stop charging: As its name implies, this will toggle between charging and not charging.

7 - Set temperature: Set the driver's temperature (also passenger if the controls are not split) to the value specified (minimum and maximum are vehicle dependent). Unit follows the device's configured unit format.

8 - Adjust Departure time: If a time is already set, it will deactivate departure, otherwise it will set the departure to the time entered in 15-minute increments. Time format follows the device's configured time format (12h/24h).

9 - Sentry Toggle: Toggles Sentry On or Off.

10 - Honk: Briefly activates the vehicle's horn. There is no confirmation asked. It honks as soon as the command is received by the vehicle.

11 - Open Frunk: Will show *Open Frunk* or *Close Frunk* (if Powered Frunk checkbox checked). There is no confirmation asked. It will open the frunk as soon as the command is received by the vehicle unless it's moving.

12 - Open Trunk: Will show *Open Trunk* or *Close Trunk* (only does something if the trunk is mechanically actuated to close). There is no confirmation asked. It will open/close the trunk as soon as the command is received by the vehicle unless it's moving.

13 - Open Port: This command knows the state of the port and will show either open the port, close it, unlock the cable or stop charging.

14 - Vent: Vent the windows or close them if open. Does not work on newer vehicles.

15 - Homelink: Activate Homelink.

16 - Toggle View: Toggle between the default and text mode view.

17 - Alternate Frunk/Trunk/Port: Alternate the available options for the upper left quadrant between *Open Frunk* (default), *Open Trunk*, *Open Port* and *PopUp Menu*.

18 - View data screen: For button-operated devices that don't have a touch screen. Allows to view the data screen. Up/Down moves within a screen, Select moves to another screen.

19 - Select Vehicle: Shows a popup menu with a list of vehicles the account has access to control.

20 - Reset: Reset the communication parameters with the vehicle. A new access token will be requested, and authentication could be required.

21 - Force wake: Sends a Wake command to the vehicle.

22 - Set refresh time: By default, the application requests a new vehicle state every 4 seconds. With this option, you can change this from 0.5 seconds to 9 seconds in 0.5 second increments.

23 - Remote Boombox: Activate the *remote boombox* (i.e., "fart on demand").

24 - Climate Mode: Set the mode for the climate. Options are *Off*, *On*, *Dog* or *Camp*. Unless Off is selected, this will also turn on the climate.

25 - Media Control: For button operated watches or watches without Glance support, Allows the control of the vehicle's media player through your watch. Useful when your phone is in the vehicle but you're not, like when washing your vehicle.

More Details

For more details and a changelog of what has changed and when, you can consult the README file here:

<https://github.com/SylvainGa/Tesla-Link/blob/master/README.md>

You can find the application in the Connect IQ store here:

<https://apps.garmin.com/en-US/apps/3ca805c7-b4e6-469e-a3fc-7a5c707fca54>

Helping

If you want to help translating this application in different languages, contact me through the Connect IQ Store and we'll set something up.

<https://apps.garmin.com/en-US/apps/3ca805c7-b4e6-469e-a3fc-7a5c707fca54>

Acknowledgement

This application would not have been possible if Steven Walter wouldn't have made the foundation (and most of the walls lol) of his application. You can find his version of the application here in the Garmin Store:

<https://apps.garmin.com/en-US/apps/f5f8b74f-f04a-4ad9-9575-231a33640475>