

EnergyFlow for Tesla

The EnergyFlow for Tesla driver enables Control4 to integrate with Tesla Energy products like Tesla Powerwall and solar installations.

Configuration

Prerequisites

1. Energy products must be provisioned by Tesla installers.
2. Customer must have a Tesla account.

Initial configuration

1. Add all bundled drivers to Composer. Driver menu > Add or Update Drivers or Agents.
2. On the right side of Composer, search for EnergyFlow for Tesla driver, and add to the project.
3. In the **Actions** property dropdown, select `Authenticate`.
4. In the **Properties** tab, copy the `Authentication URL`.
5. Send the authentication link to the customer. The link will direct the customer to the Tesla authentication site where they will enter their credentials. They will be asked to grant "EnergyFlow Control4 Driver" access to:
 - Profile Information: Profile information is necessary to determine which region the customer is in so the driver uses the correct Tesla region API endpoint. No other information about the customer will be stored.
 - Energy Product Information: Information about the energy products a customer has installed, such as Powerwall.
 - Energy Product Commands: Access to modify settings such as Powerwall reserve battery percent.

Note: The authentication process will time out after 30 minutes. If the customer takes longer than 30 minutes to complete authentication, start over with the **Authenticate** action which generates a new `Authentication URL`.

5. Wait for the customer to complete the authentication process. The driver will periodically check authentication status. Once successfully authenticated, the `API Status` on the **Properties** tab will display `Successfully authenticated` followed by `Last API request was successful`. The customer will not need to authenticate again unless they revoke the driver's access.
6. After authentication, the driver automatically gathered information about the customer's Energy products. Binding connections were created for each Site in the customer's account, and for each feature of the customer's system. Bindings include:
 - Battery (Powerwall)
 - Grid
 - Solar
 - Load (House)
 - Storm Mode

Note: You may not see all bindings if a customer's Site does not have one or more products/features. For example, if the customer does not have solar, there will be no solar binding.

7. Navigate to **Connections** and find the EnergyFlow for Tesla driver again. You will see the bindings mentioned in the previous step.
8. For each binding, add the associated display driver. For example, for `Battery State Out`, add the `Battery Display` driver to the project.
9. Make the connection between the bindings for the EnergyFlow for Tesla driver and each display driver. This is most easily done from the EnergyFlow for Tesla driver because all the bindings are in one place and when you select each type it will only show devices with the matching type.
10. Add the experience buttons to the desired navigators. We recommend adding them to the **Comfort** or **Security** menus. Then customers can favorite them to the main screen of a room, if desired.

Properties

- `Cloud Status` Indicates if the license is activated, expired, or if updates are available.
- `Automatic Updates` If 'On', automatically install updates when they become available.
- `Authentication URL` Only visible when the driver is not authenticated. After selecting the `Authenticate` action, an authentication URL will display in this property.
- `API Status` Status of the last API request. When an error occurs this property will contain an error message or HTTP response code.
- `User Region` Visible after authentication, displays the Tesla API region of the customer's user account. Account region determines which API URL is used for requests.
- `Actions` Driver actions such as 'Authenticate', 'Update Energy Sites' and 'Add Devices'. 'Update Energy Sites' only needs to be executed if the customer adds a new energy product to their account since initial configuration of the driver. See configuration documentation for information on the other actions.
- `Driver Version` Numeric version of the driver.
- `Log Level` Print messages to the 'Lua' tab, and also log to the Control4 debug log. Debug level prints detailed debug information from the driver. Trace level prints raw HTTP request data.

- `Poll Time Minutes` How often to query Tesla for status updates - battery percent, battery charging, etc. 5 minutes is the default and lowest poll time supported. This is intended to balance the timeliness of status updates with Tesla API limits.
- `Combine Solar Inverters with Battery` When a Tesla Energy install has both solar inverters and batteries, usually the battery aggregates the solar production along with home load and battery charge/discharge. In this case it's not necessary to track the inverter production separately. This can often be seen in the Tesla app where the inverters may be added to the app separately (swipe on the main screen). When set to 'No', this driver will create bindings for batteries and any inverters separately. When there is more than one inverter this could cause confusing metrics to be displayed. Most installs should leave this property set to 'Yes'.

Programming

The EnergyFlow for Tesla driver itself does not contain any events, commands, or conditionals for programming. Each device driver (Battery, Grid, Solar, Load and Storm Mode) contains relevant events, commands, conditionals and variables.

However, this driver does create variables for each Telsa Site's product status. Just as with connection bindings, variables are only created for the installed products/features of the site. This data is also replicated in each device driver's variables. Use whichever variables you find most convenient. Device drivers may have additional variables.

Variables

- `<SITE_NAME>_BACKUP_RESERVE_PERCENT`
- `<SITE_NAME>_BATTERY_IS_CHARGING`
- `<SITE_NAME>_BATTERY_IS_DISCHARGING`
- `<SITE_NAME>_BATTERY_PERCENT`
- `<SITE_NAME>_BATTERY_POWER_WATTS`
- `<SITE_NAME>_GRID_POWER_WATTS`
- `<SITE_NAME>_GRID_STATUS`
- `<SITE_NAME>_ISLAND_STATUS`
- `<SITE_NAME>_LOAD_POWER_WATTS`
- `<SITE_NAME>_SOLAR_POWER_WATTS`
- `<SITE_NAME>_STORM_MODE_ENABLED`

Support

We hope you have a trouble-free experience with this driver. If you encounter problems, please contact Driver Central support as a first step. If they're unable to resolve your problem they will escalate the problem to Blessing Innovations LLC.

If there are additional features you would like to see in this driver, please submit them by creating an issue at <https://gitlab.com/dblessing/c4-energyflow-for-tesla/-/issues>