

## Trailer Tracking and Security

The 2850 is a high-performance beacon designed for commercial trailers which are typically tethered to 12V and 24V vehicle systems. Trailers may now be tracked independently in the Nero portal, regardless of whether they are tethered to a vehicle. The device transmits location data using the latest 4G LTE network technology.



This fully weather-proofed device has an internal battery that will power the device for more than one month while the trailer is untethered, providing periodic location data.

### Kit Contents

- GPS Beacon device with SIM
- 16 ft (4.9 m) Wiring harness

### Tools and Supplies Required

- Wire cutters, wire strippers
- Voltmeter (multimeter)
- Soldering iron, solder
- Electrical tape
- Plastic cable ties
- Screw drivers, mounting screws
- Wrenches, sockets

## Beacon Installation

The 2850 comes with highly sensitive internal GPS and cell network antenna modules. Because of this, the beacon must be positioned on the trailer so that it has a clear signal path to the sky as much as possible, without metal obstruction. The internal antenna will allow signals to be received regardless of the orientation of the device once it is installed.

- Determine beacon installation position but do not fasten it in place until all wiring is complete.
- Determine the best location for the beacon – a strong flat surface that can be drilled to accommodate the mounting holes is ideal.
- Visibility of the indicator LEDs will be useful for testing and troubleshooting.

## Connect Power and Ignition Sense

The 2850 power harness is connected to the beacon with a weather-proof connector. It contains 8 colored leads, 3 of which are important for the proper connection of the device:

- Constant Power (Red)
- Ground (Black)
- Ignition Sense (Yellow)

**Vecima 2840 Power and I/O Connections**

Pin	Color	Description
1	Blue	General I/O 1 (optional Door Sensor)
2	Brown	General I/O 2 (unused)
3	White	RS-232 RX (unused)
4	Green	RS-232 TX (unused)
5	Yellow	ACC Input (Ignition Sense)
6	Red	Primary Power Source
7	Black	Ground
8	Orange	1-Wire Protocol input (optional Temperature Sensor)

**Connection Instructions**

- Connect the Black (Ground) wire to battery negative or the trailer chassis. **This wire must be connected first, before the power wire.** Be sure the grounding screw is not painted or coated with an insulating material.
- Connect the Red (Power) wire to a constant 9-32V power connection point. **It is recommended to connect directly to the trailer's power source (i.e. directly to the trailer connector cable).**

Warning: Some trailers may be equipped with an internal battery. Powering the 2850 from this source is not recommended, as the internal battery may be drained by the normal operation of the beacon.

- Connect the Yellow (Ignition Sense) wire directly to the same power connection point as the red wire. **Failure to install the ignition sense correctly will result in erroneous data being reported from the beacon.**

**Notes**

- If the wiring harness needs to be extended, use the same gauge wire. Solder the extension wire on, then insulate with heat shrink tubing or electrical tape.
- Ensure that no wires are routed near heat sources.
- Ensure that any wires in the wiring harness that are not to be connected do not come in contact with power, ground, or any other voltage. Insulate them with electrical tape.

**Important Notice**

The 2850 is designated to operate from 9 to 32 Volts DC. The user is responsible for ensuring the voltage supplied to the 2850 remains in this voltage range to include transient voltage spikes and load dump voltages. Failure to comply may damage the 2850. The current draw under normal operating conditions is 30-120mA at 12V.

## Connect and Mount Beacon

- Affix the beacon securely to the vehicle using the mounting holes found in the tabs at either end of the beacon. If the beacon is not securely mounted, it may report false data.
- If a suitable panel for affixing the beacon is not available, fastening the beacon to a bracket or wire bundle with plastic cable ties is also adequate.
- Secure any loose or extra lengths of wire.

## LED Indicators

The 2850 is equipped with two status LEDs, one for GPS (green) and one for wireless network communications (red). The LEDs use the patterns described in the following table to indicate the current state of the device.

Vecima 2840 LED Indicators

LED	LED Color	LED Pattern	Description
GPS	Green	Steady blink (0.7 seconds ON, 0.7 seconds OFF)	Searching for GPS signal
		Solid ON	GPS position fixed
Cell Network	Red	OFF	Cell module is OFF
		Steady blink (0.7 seconds ON, 0.7 seconds OFF)	Searching for Cell signal
		Slow blink (0.2 seconds ON, 2 seconds OFF)	Cell network registered
		2 blinks every 2 seconds	Cell network connected
		Solid ON	Server is connected
		Continuous fast blinking	SIM PIN error

## Scenario Configuration

The primary feature of the 2850 is the ability to locate and track the trailer, even while it is untethered from the vehicle. When disconnected from the power source, the beacon can be configured to enter sleep mode to conserve internal battery power, while periodically sending location points to the portal.

**Note that the Trailer Tracking (2850) scenario must be created in the portal to enable sleep mode.**

Without the scenario, the 2850 will remain awake and be locatable when untethered, but the internal battery may be drained within 2-3 days.

### Trailer Tracking (2850) Scenario Setup

Scenario Information

Scenario Name:

Trailer Tracking (2850) \*

Department:

Default ▼ \*

Event Type:

Trailer Tracking (2850) ▼ \*

Tracking Start Time (daily):

04 ▼ 45 ▼ PM ▼

Unpowered Tracking Interval:

8 Hours ▼

Enable Enhanced Tracking:

☒ \* allows alternate tracking options while the trailer is tethered (i.e. powered)

Powered Tracking Interval:

30 Min ▼

Notes:

This event can be used with the following beacons: 2850

This scenario allows you to configure tracking intervals for the 2850 device.

While unpowered, sleep mode is enabled between tracking times.

Note that live locates are unavailable in sleep mode, but the Trailer Tracking (2850) scenario will continue to operate, sending locates on the configured schedule. Tracking may be enabled at a frequency of up to 3 locates per day, every 8 hours from the start time set by the user. To preserve battery life, the interval may be set to 12 hours (2 locates per day), or once every 24 hours.

While tethered to the vehicle (i.e. connected to a power source), the 2850 will remain awake and may be located or tracked directly from the portal at any time. The scenario allows the user to configure the device to send regular tracking points at intervals of 30 minutes, 1 hour or 2 hours while connected to a power source.

Other scenarios may be configured to provide email and/or SMS notifications related to power:

1. When the power is cut from the device (i.e. when the trailer is untethered), and
2. When the internal battery is low and requires recharging. Note that the internal battery will fully recharge in 2-3 hours while connected to a power source.

Scenario configuration changes will not be processed while the device is in sleep mode. The commands will be queued for the device, and processed the next time the device wakes up.

## Testing and Troubleshooting

**After installation, it is strongly recommended that a road test be performed to verify the beacon wiring and to ensure that the configured scenarios are performing correctly.**

If you are still experiencing difficulties after following the steps in this guide, please contact:

[Vecima Support](mailto:telematics.support@vecima.com) at [telematics.support@vecima.com](mailto:telematics.support@vecima.com).

## Addendum – Door Sensor Configuration

The 2850 Trailer Tracking Unit (TTU) supports input from a single door sensor. When installed and configured, the door sensor will generate events in the portal when a trailer door is opened or closed.



Most models of 2-wire magnetic sensors are supported. The heavy-duty and light-duty examples in the image above may be obtained from <https://heitechcs.com/>.

The weatherproof connection on the sensor contains two wires, as shown in the image below. One of these wires connects to Input 1 (Pin 1 – Blue wire) on the 2850 wiring harness. The other wire connects to Ground (Pin 7 – Black wire) on the harness or any other Ground source. Either wire on the sensor may be used for these two connections.



The sensor can be installed anywhere around the door to be monitored, so that the two halves are in close proximity (within 1 cm) when the door is closed. Once connected to the beacon, the events are generated when the two halves of the sensor are separated (for a Door Opened event) or when they come in close proximity (Door Closed).

For the events to be generated, a **Door Sensor Alert** scenario must be configured in the portal. This scenario may optionally be configured to send notifications (either SMS or email) when door open/close events are generated. Note that if the 2850 is in sleep mode, it will wake up when door events are generated so that messages can be transmitted to the portal.

## Addendum – 2850 Temperature Monitoring

The 2850 beacon includes support for connection to a Temperature Sensor which supports the 1-Wire communications protocol.

Fleet Managers have the ability to monitor temperature-sensitive cargo and receive alerts in their portal if configurable temperature thresholds are violated.

2850 Temperature Sensor: Part # 74xx\_285x-TEMP



## Temperature Sensor Installation

Up to 2 Temperature Sensors may be connected to the 2850 wiring harness. The Orange wire on Pin 8 is the 1-Wire data interface.

- Connect the Red wire on the Sensor to the Orange wire on the 2850 harness.
- Connect the White wire on the Sensor to Ground (the Black wire on Pin 7 on the harness, or any other Ground source).
- If 2 Temperature Sensors are installed, wire both sensors to the same connections on the wiring harness.

Once installed, the operation of the Temperature Sensor may be tested using the Installer Test Tool on a mobile device.

Optional Test: Temperature Sensor Status

If a temperature sensor is connected to the beacon, this test checks the wiring and returns the current temperature reading if the sensor is correctly installed.

**Start Test**

## Scenario Configuration

In order to receive temperature readings and send notifications, a TTU Temperature Sensor (2850) scenario must be configured in the portal.

### TTU Temperature Sensor (2850) Scenario Configuration

Scenario Information

Scenario Name:

Department:

Event Type:

When this scenario is active, temperature data from one or more sensors is included with all location points received from the device. The best method for obtaining regular polled temperatures is through the use of a Tracking scenario. Up to 2 temperature sensors are supported.

TTU Temperature Threshold Alerting

Set Threshold Unit:

Set Threshold Duration:  mins

Set Alert Threshold:

An alert is generated when the temperature remains beyond either threshold for the time indicated by the Threshold Duration. The selected duration applies to all sensors.

**Notes:**  
This event can be used with the following beacons: 2850

This scenario allows TTU devices to receive temperature updates from up to 2 sensors and generate alerts when temperature thresholds are crossed.