halo
CONNECT

USER MANUAL

IN-100CM

Keep this manual in the vehicle for future reference.

Read this manual before using this product. Failure to follow the instructions and safety precautions in this manual may result in serious injury or death.

IMPORTANT SAFETY INFORMATION

The Halo Connect Gateway and its components should be installed and maintained in accordance with the instructions in this manual. Proper installation of the Halo Connect system is critical to ensure safe use of the device. Failure to do so may result in injury or death, damage to equipment, material or property. Carefully read, understand and follow all safety related information within this manual.

⚠ WARNING: Exercise caution when working with the vehicle power sources to avoid injury.

SAFETY WORDS AND SYMBOLS

Please pay attention to special symbols used through this manual to convey important information. Hazard signal words such as WARNING, CAUTION, or NOTICE are used throughout this manual. Information accented by these words indicates a point of emphasis and importance. The following definitions comply with ANSI Z535.6 and indicate the use of signal words as they appear within this manual.

	This is the safety alert symbol. It is used to alert you of potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠ WARNING	WARNING indicates a hazardous situation that, if not avoided, could result in serious injury or death.
⚠ CAUTION	CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injuries.
NOTICE	NOTICE is used to address practices which could result in damage to equipment or property.

CONTENTS

CUSTOMER SUPPORT

Phone	1-844-RUN-HALO
Website	www.aperiatech.com
Sales	sales@aperiatech.com
Customer Support	support@aperiatech.com

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INTRODUCTION

HALO CONNECT WEB PORTAL

The Halo Connect Web Portal gives you full control over your data, alerts, and reports. Fleet issues are easily viewed and organized, with notifications sent using email and other common systems. For each vehicle issue, the Portal will provide recommended actions to facilitate resolution. The Portal also distills your data into analytical reports to visualize your fleet's trends and capture a big picture view of your fleet's performance.

Access the web portal at: https://haloconnect.aperiatech.com

HALO CONNECT GATEWAY

The Halo Connect gateway is a tire pressure monitoring device comprised of a durable enclosure that is secured in the cab of the vehicle. It uses a built-in LTE cellular connection to send data to the cloud, a Bluetooth connection to talk to mobile devices, and a GPS connection to easily locate vehicles with tire issues.

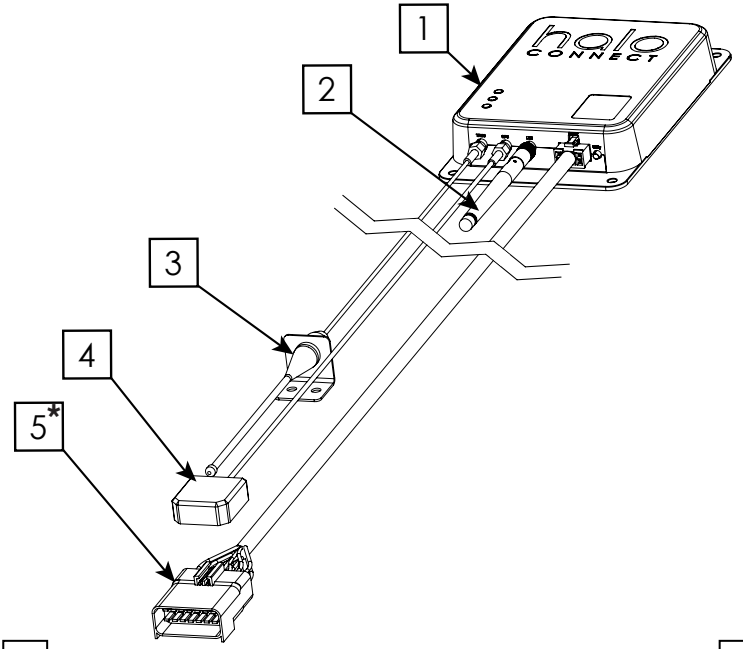
HALO CONNECT MOBILE APPLICATION

The Halo Connect mobile application makes installing and configuring the Halo Connect system a seamless process. The app allows you to choose between various truck configurations, register the vehicle in our system, and add or replace sensors.

Access the app at: https://www.aperiatech.com/HC-app

GETTING STARTED

HALO CONNECT SYSTEM COMPONENTS



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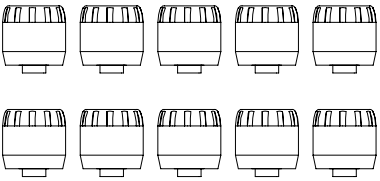
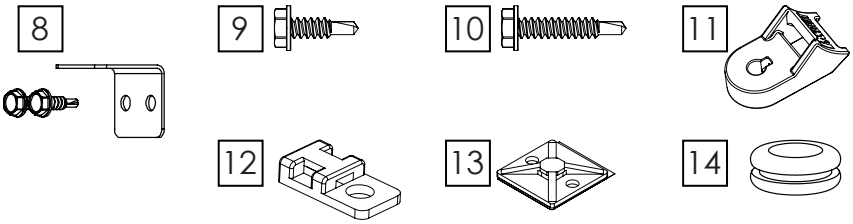


1. Gateway
2. LTE antenna
3. TPMS cable w/ antenna
4. GPS antenna
5. Power harness*
6. Gateway ID label
7. TPMS sensor kit

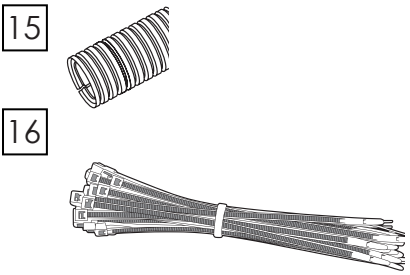
*Power harness connector will vary based on vehicle type (RP1226 connector shown)

START

MOUNTING HARDWARE**



8. TPMS antenna bracket
9. 5/8" Self tapping screws
10. 1" Self tapping screws
11. Heavy duty cable tie mount
12. Screw mount cable tie mount
13. Adhesive cable tie mount
14. Grommet for 1/2" hole
15. 3/8" UV stabilized cable loom
16. UV stabilized 8" cable ties



**Further instructions are provided on hardware kit packaging.

INSTALLATION TOOLS (NOT INCLUDED)

10. 5/16" hex head socket
11. Cutters (for cutting cable ties)
12. Isopropyl alcohol and towel
13. Multimeter
14. Android (6.0 or later) or iOS mobile device
15. Aperia SMA torque wrench (part #: TK-104SMA)
16. Misc. tools to gain access to dash and route cables

GATEWAY TECHNICAL SPECIFICATIONS

Operating Voltage	9-28V DC
Operating Current	100-200 mA
Operating Temperature	-40° - 158° F (-40° - 70° C)
Storage Temperature	-40° - 185° F (-40° - 85° C)

HALO CONNECT INSTALLATION

STEP 1. DOWNLOAD MOBILE APP

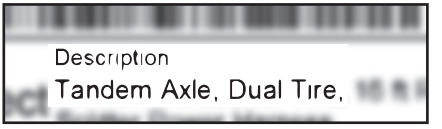
To prepare for gateway activation, download the Halo Connect app onto a mobile or tablet device from the Google Play Store (Android 6.0 or later) or Apple App Store (iOS).

App Link: http://aperiatech.com/HC-app

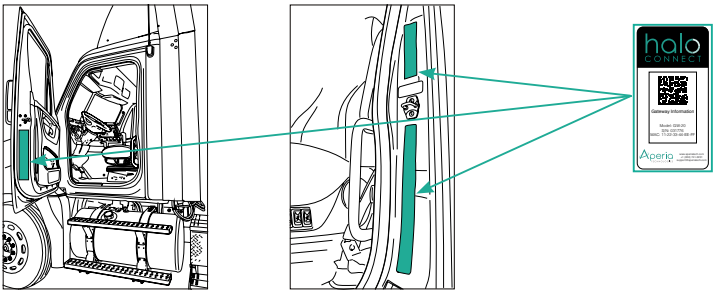
STEP 2. AFFIX GATEWAY ID LABEL TO VEHICLE

The gateway ID label is located on the bottom of the gateway. It contains information necessary for activating and troubleshooting the gateway.

1. Confirm that the vehicle axle/ wheel configuration on the Halo Connect packaging label matches the vehicle configuration.



2. Select an easily accessible location for the gatway ID label (door jamb is recommended).



3. Clean the surface and apply the gateway ID label.

STEP 3. DETERMINE GATEWAY LOCATION

The gateway must be permanently attached to the inside of the vehicle cabin.

The gateway will have power and antenna cables attached to it that need to be routed to locations specified in later steps. See **Installation, Step 7** for further instructions on attaching the gateway to the vehicle.

> ⚠ **CAUTION:** Before attaching the gateway to the vehicle, review the entire install procedure, and ensure the antenna and power cables are safely routed to the recommended locations.

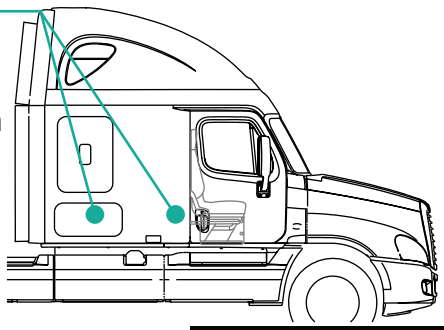
Other gateway placement considerations include:

- Accessible for maintenance.
- Wall-mounted, at least 8 in (20 cm) away from driver and passengers and at least 12 in (30 cm) from the floor of the cab.
- Does not interfere with passenger access or storage.
- Protected from other items, spills, and passenger movement in vehicle.
- Does not interfere with seat movement or positioning.
- Does not interfere with seatbelt.
- Allows for permanent attachment using self tapping screws or other secure attachment based on fleet preference.

BEST GATEWAY LOCATION
Inside cab of vehicle.

Wall-mounted behind seat or in undercab storage.

Minimum distance of 8 in. (20 cm) away from driver and passengers and 12 in. (30 cm) from the floor of the cab.



STEP 4. CONNECT TO POWER AND GROUND AND ROUTE POWER HARNESS

In order for the vehicle's tires to be monitored continuously, the gateway power cable needs to be connected to a continuous, or unswitched, 12V or 24V power source and be securely grounded to the vehicle chassis.

If the gateway loses power it will stop collecting data until power is restored. This may lead to delayed notification of tire issues. When gateway power is restored, function will resume automatically.

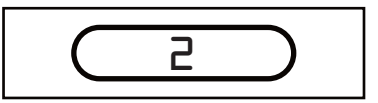
The power access point depends on the type of power harness and is described in the following pages.

NOTICE: IMPORTANT POWER HARNESS GUIDELINES

- Aperia recommends using the provided harness without modification.
- Attach the ground terminal to a clean metal surface free of paint or corrosion. A poor ground connection may result in intermittent function of the gateway.
- When routing the harness avoid sharp edges that may cut or abraid the wire harness or heat sources that may melt the harness.
- Grommets must be installed at points where cables pass through sheet metal or frame.
- Avoid routing the harness in a way that will cause tension or otherwise stretch the wires or connectors.
- Secure wires to the vehicle every 18" (45 cm) using wire ties.
- Secure the harness within 3" of the connector and/or provide strain relief for the wiring where it exits the connector.

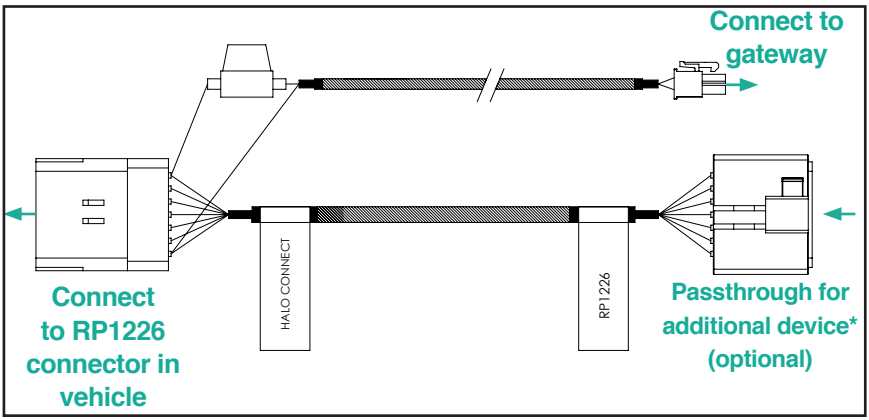
⚠ **WARNING:** The positive wire of the power cable must be fused. An un-fused power cable may over-heat and lead to a vehicle fire.

Fuse Rating: 1 or 2 Amp



4A: RP1226 POWER HARNESS

The RP1226 power harness uses a connector specified in TMC recommended practice RP1226. This connector is an option in many makes/models from model years 2019 and later.



*Recommended practice RP1226 and J1939 protocol states that only one device should be connected per connector. This harness only connects the power and ground pins to the gateway, not the vehicle data pins in the RP1226 connector, thereby not violating these requirements.

Install Steps for RP1226 Power Harness

1. Connect the RP1226 harness directly to the OE connector in the vehicle , removing other devices that may be connected.
2. Attach any additional devices to the splitter on the harness.

Aperia offers two versions of the RP1226 power harness that connect to two different power sources on the vehicle as described below.

APERIA RP1226 POWER HARNESS OPTIONS			
HARNESS PART #s	**HC- PART #s ENDING IN**	**DESCRIPTION**	**COMPATIBILITY**
CB-RPS16A	-RPS16	Connects to continuous power, bypasses battery disconnect switch.	Not Compatible with PACCAR Vehicles
CB-RPS16A-P1	-RPS16-P1	Switched power - turns off with battery disconnect switch.	All Vehicle Makes

OEM RP1226 CONNECTOR LOCATIONS			
MAKE	**MODEL**	**YEAR**	**LOCATION***
Freightliner	all	2019+	Mid-height, center of dash
Kenworth	all	2019+	Driver side of cab, near fuse panel
Peterbilt	all	2019+	Driver side of cab, near fuse panel
Volvo	all	2019+	Top, center of dash, near fuse panel
Mack	all	2019+	Under instrument panel in dash
Other	n/a	n/a	Check w/ OE

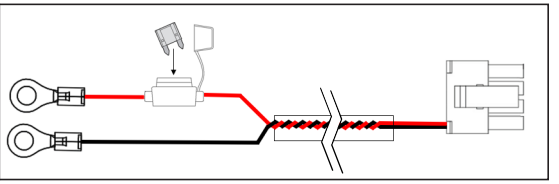
*Confirm RP1226 connector presence and location with OEM/Dealership or in the vehicle manual.

4B: DIRECT CONNECTION POWER HARNESS

The direct connection power harness is designed to access power by attaching directly to the studs of the truck battery, or to the battery input posts of an inverter or fuse panel.

VEHICLE CONNECTION POINT OPTIONS

1. FUSE PANEL POSTS
2. INVERTER INPUT POSTS
3. BATTERY TERMINALS



Install Steps for Direct Connection Power Harness

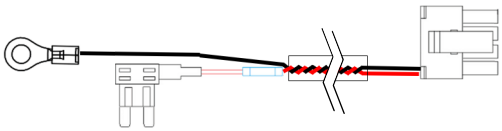
1. Identify power source
2. Attach ring terminals directly to posts and secure with existing fasteners.

Conversion Washers

The 3/8” ring terminals are compatible with a standard truck battery. Two 5/16” washers are also included to use to adapt the 3/8” ring to the smaller stud. To use the washers, put the ring terminal on the stud, then the washer, followed by the previously installed fasteners.

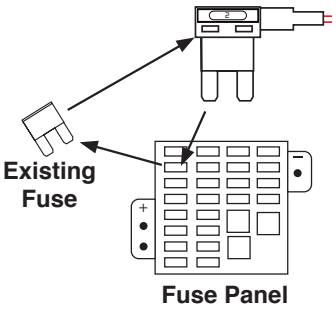
4C: MINI FUSE TAP POWER HARNESS

The mini fuse tap power harness is designed to access power by tapping into an existing fuse slot at a fuse panel. It includes a mini fuse tap on the positive wire and a #10 ring terminal on the ground wire.

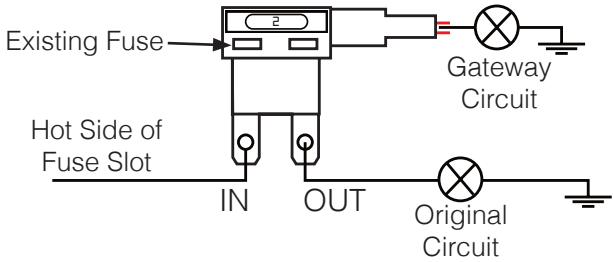
VEHICLE CONNECTION POINT OPTIONS	
1. FUSE PANEL	

Install Steps for Fuse Tap

1. Locate fuse panel.
2. Select fuse on a battery circuit.
3. Remove existing fuse from panel.
4. Insert existing fuse into fuse tap.
5. Insert fuse tap into fuse slot according to fuse tap diagram below.

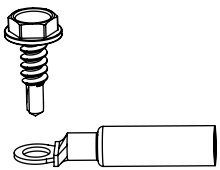


Fuse Tap Diagram



Ground Connection

Attach the ground connector to an existing vehicle ground stud or use the included self tapping screw to attach to a clean, corrosion free, bare piece of metal.

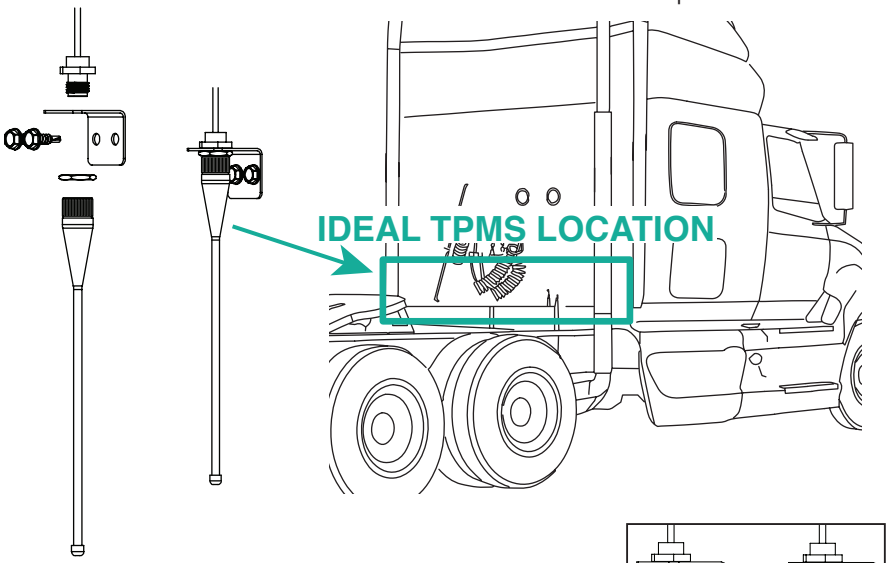


NOTICE: Using a multimeter, probe power and ground of the power harness to check that the battery voltage is correct, and continuous even when the ignition switch is off.

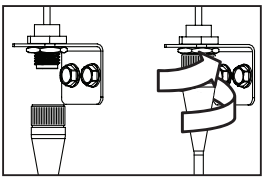
STEP 5. ATTACH TPMS ANTENNA TO VEHICLE

The TMPS antenna must be placed outside on the rear of the vehicle, and the cable needs to be routed to the gateway. Find, or make, an opening in the cab to route the cable from the gateway to the outside of the vehicle.

Once the cable is routed, use the included TPMS antenna bracket to affix the antenna to the rear of the vehicle. Place the TPMS antenna low on the back of the cab, oriented downward, and not contacting any metal. Minimize metal obstructions between the TPMS sensors and antenna where possible.



Ensure the antenna is fully tightened onto the cable. It may require soft grip pliers to tighten fully.



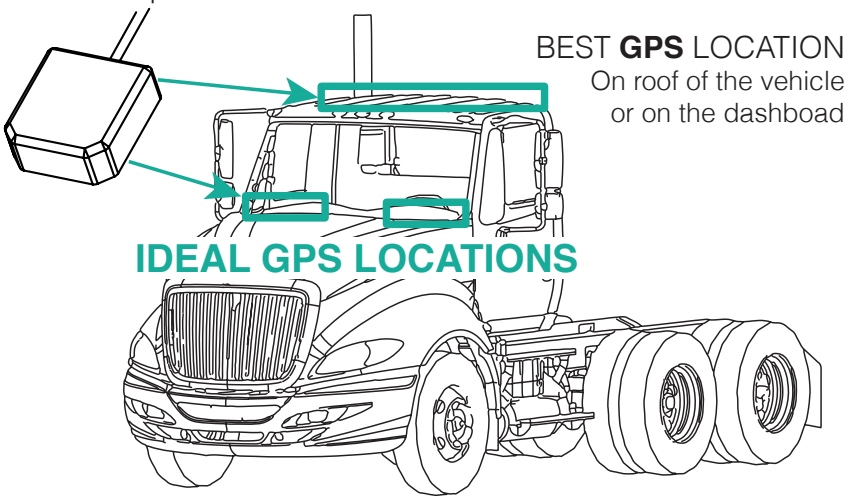
NOTICE: Expected vehicle operation must be considered when routing the sensor antenna to avoid damage to the antenna. Follow the antenna cable routing guidelines found later in this section.

⚠ **WARNING:** Avoid creating a tripping hazard when routing the TPMS cable on the exterior of the vehicle.

STEP 6. ATTACH GPS ANTENNA TO VEHICLE

The GPS antenna works best with a clear view of the sky. The recommended install location is the roof or the dashboard as close to the windshield as possible. The antenna should lay as flat and level to the ground as possible.

If running the antenna outside, find, or make, an opening in the cab to route the cable from the gateway to the outside of the vehicle. Clean the surface and use the included double sided adhesive tape to attach the antenna to the vehicle.

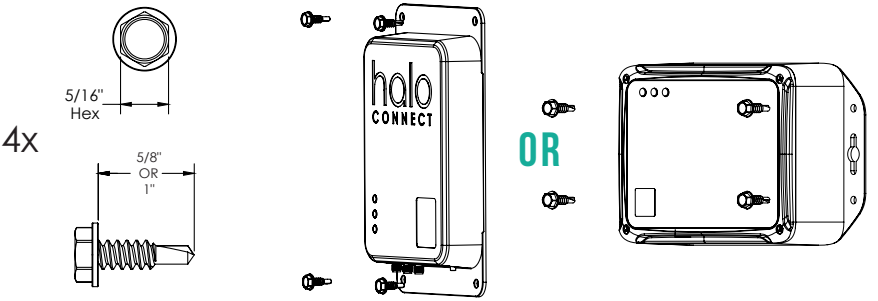


NOTICE: ANTENNA CABLE ROUTING GUIDELINES

- When routing the cables avoid sharp edges that may cut or abraid the wire cable or heat sources that may melt the cable.
- Grommets must be installed at points where cables pass through sheet metal or frame.
- Avoid routing cables in a way that will cause tension on the wires or connectors.
- Secure wires to the vehicle every 18" (45 cm) using wire ties.
- Route cables within frame channels, if possible. Avoid routing cables on the outside of exposed frame members.
- Secure the cables within 3" of the connector and antenna and/or provide strain relief for the wiring where it exits the connector and antenna.
- Avoid kinking cables when routing and bundling.

STEP 7. ATTACH GATEWAY TO VEHICLE

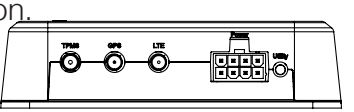
Use the included mounting screws and a 5/16" socket to securely attach the gateway in the location selected in Step 2.



STEP 8. CONNECT ANTENNAS TO GATEWAY

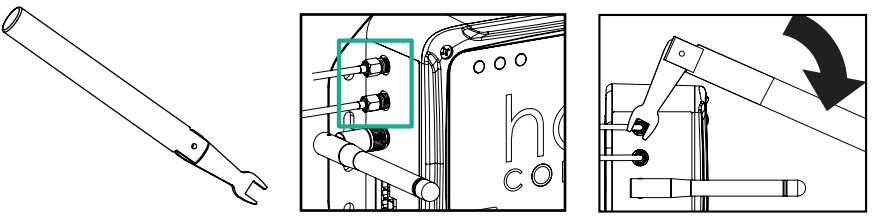
Securely tighten all antenna connections onto the gateway to 4 in-lb with a tool to ensure proper function.

Side labels on the gateway clearly indicate the port for each cable.



Aperia highly recommends using a 4 in-lb preset torque wrench when tightening the antenna cables, and have sourced high quality wrenches for purchase. To order, contact support@aperiatech.com, call 1-844-RUN-HALO, or order directly from the Aperia e-commerce website.

Link to Aperia e-commerce website

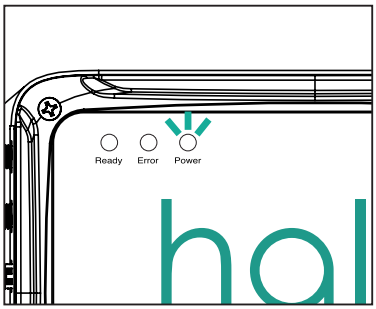


Part Number: TK-104SMA

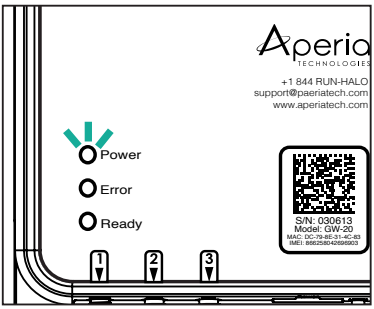
NOTICE: Ensure the cables are securely attached to the gateway to avoid loosening due to vibration during vehicle operation. Overtightened or undertightened connectors may lead to damaged connectors and/or poor antenna signal strength.

STEP 9. CONFIRM GATEWAY POWER

Plug the power cable into the gateway. A green LED will light to indicate the gateway is powered on.



OR



STEP 10. ACTIVATE GATEWAY WITH MOBILE APP

Ensure that the blue "Ready" LED is solid prior to activation. If LEDs are flashing, the gateway is recieving an update. Updates may take a minute or two. When the update is complete the LEDs will return to a solid state, and then activation can take place.

Open the mobile app and select "Set Up a New Vehicle" to start activation.

To activate the gateway, you will need the following information:

- **Fleet Activation Code (FAC)** - The FAC is unique to a fleet and is printed on the label on the outside of the Halo Connect packaging. The FAC is also available on the Halo Connect Portal if the packaging has been discarded.
- **Fleet Vehicle ID** - A vehicle's unique ID number given by the fleet and typically labeled on the vehicle.
- **VIN** - 17-character vehicle identifier typically found on the driver-side door jamb

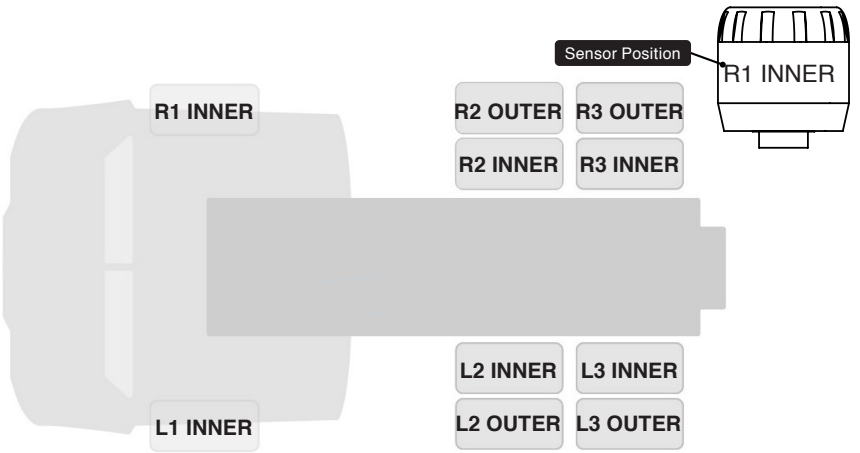
STEP 10A. INSTALL HALO CONNECT SENSORS

To save time when activating the gateway, wait until prompted to scan the barcode on the sensor pack to install the sensors. Scan the sensors after scanning the barcode.

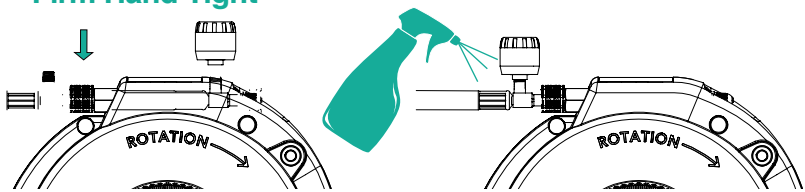
⚠ WARNING: A contaminated, corroded, or damaged valve stem or sensor seal may cause a poor seal between the sensor and valve stem resulting in a tire leak.

After scanning the sensor pack barcode, securely attach the sensor onto the Halo hose or tire valve stem.

Each sensor has a label that specifies the wheel position.



Sensor Torque: Firm Hand Tight



After installing the sensors complete the installation by following the prompts in the mobile app.

NOTICE: Do not use a tool to tighten as it may damage the sensor seal.

REGULATORY

RF EXPOSURE

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux radiations de la FCC et de l'IC définies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps. Cet émetteur ne doit pas être co-localisé ou fonctionner en conjonction avec une autre antenne ou un autre émetteur.

This device complies with part 15 of the FCC rules and RSS-247 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help
- This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

“This radio transmitter 24637-HALOC has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.”

Cet émetteur radio 24637-HALOC a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous, avec le gain maximal autorisé indiqué. Les types d'antenne non inclus dans cette liste et dont le gain est supérieur au gain maximal indiqué pour l'un des types répertoriés ne sont strictement pas autorisés pour une utilisation avec cet appareil.

Antenna	Type	Max. Gain
LTE	Whip	3.0 dBi
ZigBee	PCB	1.0 dBi
Bluetooth (BLE)	PCB	-1.61 dBi

NOM

PUERTA DE ENLACE TELEMÁTICA
NÚMERO DE IFETEL: RTIAPGW20-1589

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

Aperia TECHNOLOGIES

Changing the world one revolution at a time

Supplier's Declaration of Conformity

Responsible party details

Company name:	Aperia Technologies
Address:	1616 Rollins Road, Burlingame, CA 94010
Contact Person:	Brandon Haws
Email:	bhaws@aperiatech.com
Phone No.:	+1-844-RUN-HALO
Fax No.:	+1-415-273-4649

Product details

Product:	Halo Connect Gateway
Brand name:	Aperia Technologies
Model name:	GW-10, GW-20
Manufacturer:	Volansys Technologies Pvt Ltd.
Address:	207, Ratana Business Hub, Opp. Bharat Petrol Pump, Sanathal Chokdi, Changodar Hwy, Ahmedabad, Gujarat-382210

We hereby declare that the equipment bearing the trade name and model number specified above was tested confirming to the applicable FCC Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the Commission's requirements.

Applied Standards	Report No.:
United states CFR 47 Part 15 Subpart B - Electromagnetic Emissions (Unintentional Radiators)	BL-HK18C0003-401

The product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FC

Signature: Brandon Haws

Print name: Brandon Haws

Date of issue: 3/20/2019

Aperia TECHNOLOGIES

QTY: 1

Part Number:
IN-100CM

Description:
User Manual, Halo Connect

Aperia TECHNOLOGIES

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IN-100CM
91-00006672
PMN: Halo Connect Gateway
Model No.: GW-10 (for xBR type sub-1GHz Rx)
Model No.: GW-20 (for cc1310 type sub-1GHz Rx)
Printed in United States of America