Signel Services Inc.

RAD60
RADAR SPEED SIGN
USER GUIDE

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1.1 EQUIPMENT DESCRIPTION

The RAD60 educational radar system is an effective measure for calming traffic. The radar encourages drivers to reduce their speed by providing immediate and highly visible information.

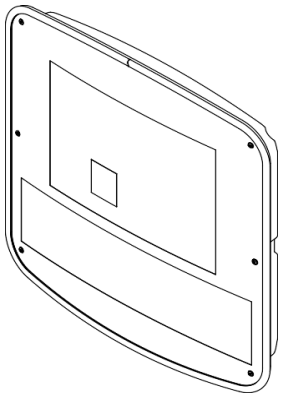
Traffic statistics are recorded to verify the lasting effect of the installation and guide future actions.

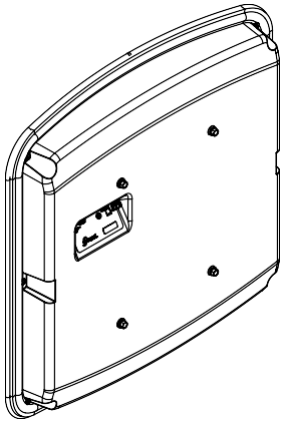
1.2 RAD60 RADAR SPEED SIGN

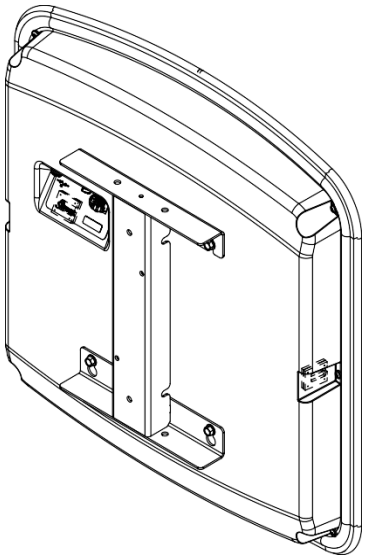
The radar integrates a tri-color speed display, an amber message display, and a state-of-the-art Doppler radar all within a molded, lightweight, and waterproof enclosure.

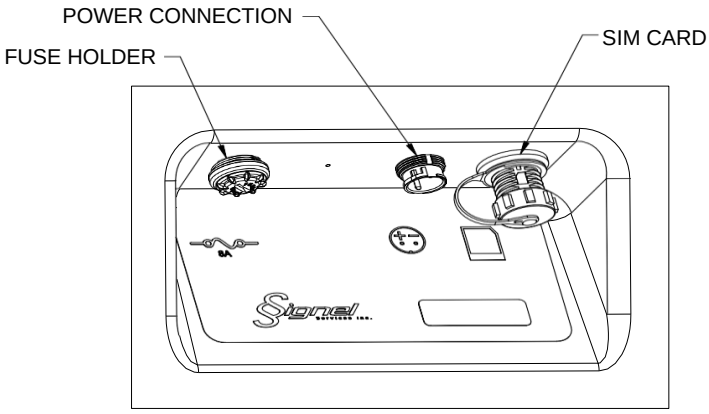
The color transition is based on the speed limit set for the radar's location. Predefined messages are set to « THANK YOU » and « SLOW DOWN»

The sign connections are made at the back of the display. The power connection uses a keyed circular connector. The SIM card inserts into a sealed screw-cap chamber. An AGC 1/4x1-1/4 fuse is replaceable without opening the enclosure.



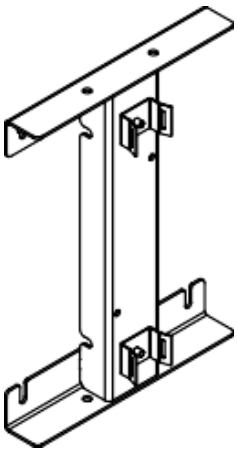


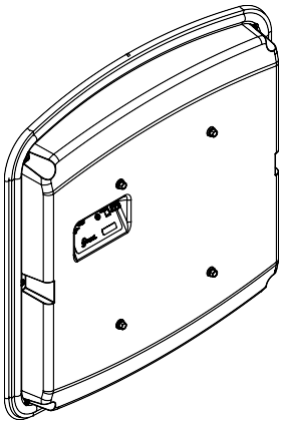


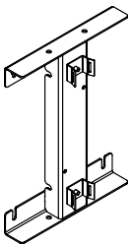


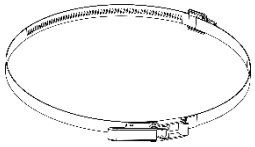
The display sign is equipped with an aluminum mounting support and stainless-steel flange bolts, allowing for quick and simple post installation.

Straps belts with quick release clips can also be supplied depending on the type of installation. Please ask your representative for the best solution for your installation.









1.3 SIGN POWER SUPPLY

The radar is a device that operates on direct current at a voltage of 12V.

The radar adjusts its operation according to the power supply voltage to avoid deep battery discharge. Three progressive levels of load shedding are provided:

- Speed display without a message
- Speed display only in case of an excess
- Display shutdown, recording maintained

Load shedding levels can be adjusted remotely by a user using a browser-based interface.

The sign is protected using an 8A, AGC fast fuse, 1/4 x 1-1/4 (cylindrical).

Based on the available power supply at the site, the following products are available:

- Mains power, RAD60EA. Where available, an economical option is an outdoor rated AC-DC converter conveniently lodged within the aluminium mounting bracket.
- Solar power, RAD60ES. An independent power supply unit that includes a 100W solar panel and batteries for year-round operation.

Should your requirement differ, appropriate solutions can be provided for:

- Lighting equipment only active during night
- Electrical ballast for 347VAC supply
- Power outage battery backup

Please ask your representative about the best solution for your needs.

1.4 INSTALLATION AND START-UP

1.4.1 Roadside placement

The sign should be installed at a height of 2m to 2.5m, measured from the bottom of the sign.

A side clearance of 0.5m to 3m is allowed.

The sign must be perpendicular to the road axis to provide the best speed accuracy.

The vertical angle of the Doppler radar is in most cases enough to allow a square installation. In cases where the gradient is more than 5 degrees either up or down, shimming may be required for best operation. Please ask your representative for the best solution for your installation.

Conditions to avoid:

- Installing the sign near large objects that could obstruct the radar beam. Large objects include existing street signs, advertising boards, parked large vehicles and trees.
- Installation within 150m of an overpass or other important gradient as it may impair readings.
- Installation at an intersection where incoming vehicles from secondary roads may interfere with your primary data analysis target.
- Also, vehicles slowing down or speeding up at a stop sign will not give you pertinent data.
- Installation in a curve.

For an installation with a solar panel, the location must have a clear view of the sky year-round. Buildings, structures and trees can cast shadows on the panel and significantly reduce the device's autonomy.

1.5 RADAR SIGN INSTALLATION

Required tools

- 1/2in wrench
- Belt tensioner
- Multimeter

First, install the mounting bracket onto the post, with the pear-shaped holes at the top and the slots at the bottom. The bracket is attached to round posts with two straps and buckles. Alternatively, bolts may be used for square posts, removing the strap fasteners if not required.

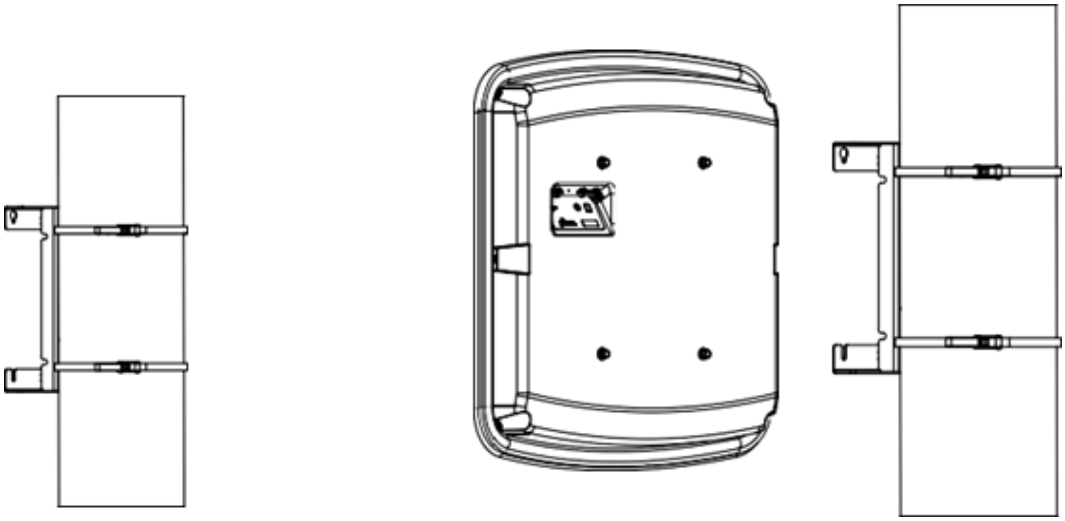
Install the 5/16-18 flanged bolts loosely on the back of the radar sign, attach the radar sign to the bracket, and then tighten the bolts completely.

Make sure to properly orient the radar perpendicular to the direction of traffic.

For your safety, it is strongly recommended to use a lift boom during the radar installation. Please observe all mandated road work zone practices for your area.

NOTE

- For installing the solar power option, it is preferable to assemble the solar block first, working in an unobstructed manner from top to bottom.



1.6 MAINS POWER INSTALLATION

Required tools

- 1/2in wrench
- Phillips screwdriver
- Belt tensioner
- Multimeter

The necessary AC-DC power converter lodges in the sign's mounting bracket. Assemble it if not already done so.

Complete the electrical connection from the mains to the converter, then from the converter to the radar sign. Secure cables to structure and route to leave loops for water-draining.

NOTE

- It is strongly recommended to install a 15 A fuse or breaker upstream from the power unit. Signel Services cannot be held accountable for damage caused by an improper installation.

1.7 SOLAR POWER INSTALLATION

Required tools

- 1/2 wrench
- Phillips screwdriver
- Belt tensioner
- Multimeter

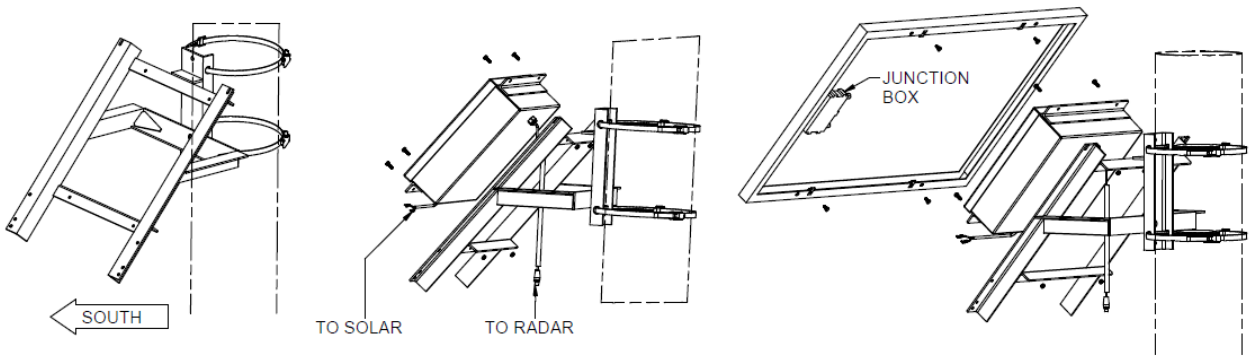
Before leaving the workshop, check the voltage at the power connector terminals and make sure that it is above 12V. A battery discharges even if it is not used: long-term storage may make it necessary to recharge the batteries.

First, install the support arm onto the post to orient the solar panel towards the south. Attachment is done with three straps and buckles, or alternatively by using bolts.

Next, install the battery box onto the support arm, electrical connectors towards the bottom. Secure it with four 1/4-20 bolts and nuts.

Finally, install the solar panel onto the support arm. Secure it with four 1/4-20 bolts.

Complete the electrical connection from the solar panel junction box to the battery box, then from the battery box to the radar sign. Secure cables to structure and route to leave loops for water-draining.



1.8 START-UP

The radar speed sign will power up as soon as connected to a 12VDC power source.

As the sign starts, a progress bar will appear in the top left corner of the display. A SIM card for an active account must be installed for the start-up to complete.

Factory defaults settings are as follow:

- Speed limit is set to 50 km/h.
- Message for speed below or equal to the speed limit is “THANK YOU”.
- Message for speeds between 51 to 80 km/h is “SLOW DOWN”.
- No message is shown above 80km/h.

The speed limit can be adjusted remotely along with several other parameters, as detailed in the following chapter.

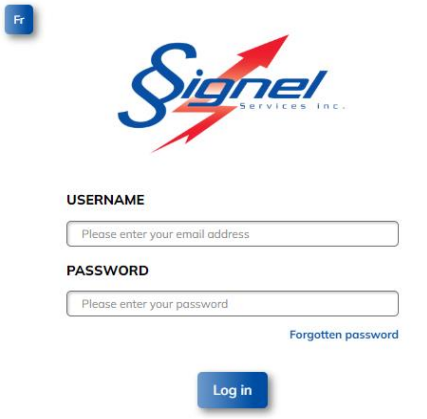
2 CLOUD FOR RAD60

2.1 SIGN-IN

To access the RAD60 remotely, navigate with your preferred browser to:

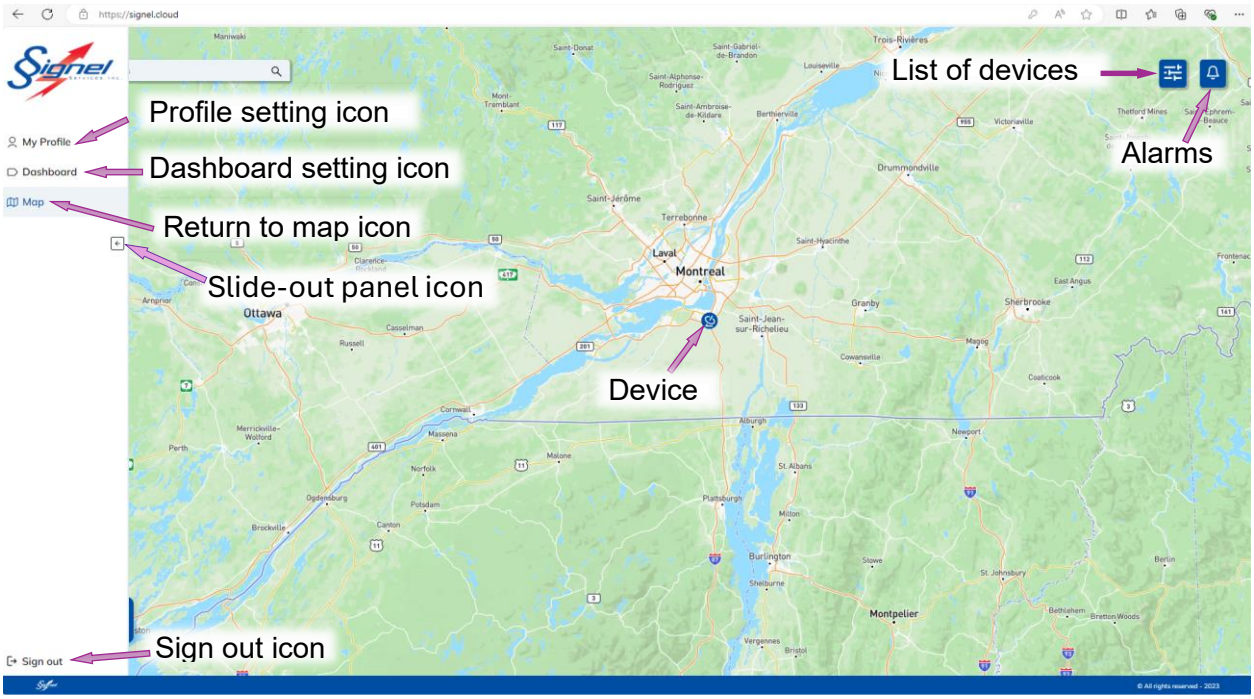
- https://signel.cloud/CONNEXION

Log in with the username and password provided at purchase. Your administrator may also add users with appropriate roles.



The initial screen displayed upon logging in is as follows:

Click on **Slid-out panel icon** to see the **side-bar**



To help you navigate the user interface, refer to the image above which shows the various buttons and their functions:

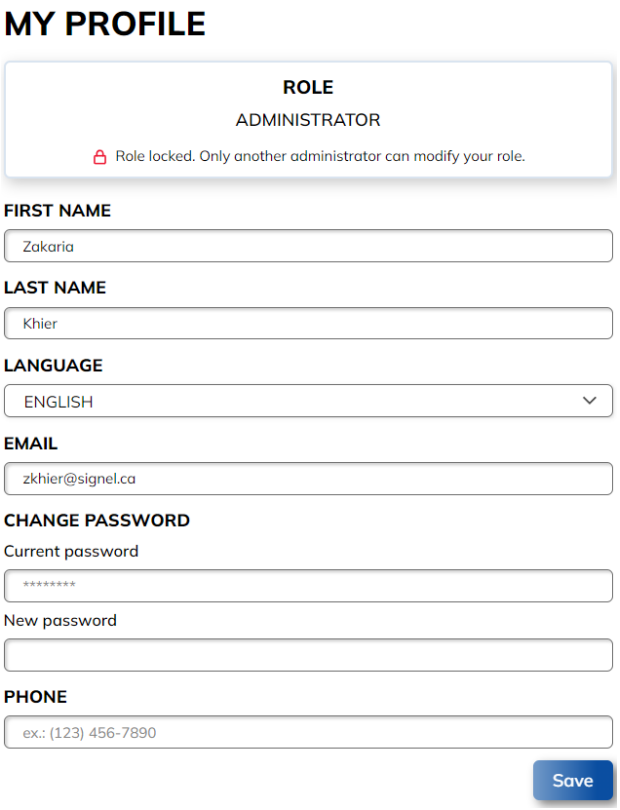
- **My Profile Icon:** Click this icon to access your profile settings, update personal information, and change the language settings.
- **Dashboard Icon:** This icon provides access to all your devices and their details. Click on this icon to manage device settings.
- **Map Icon:** Use this icon to view the geographical locations of your devices on the map.
- **Radar Icon:** Click this icon to view device locations on the map and access general information and reports for each device.
- **List of Devices:** This section displays all your devices in a list format for easier access and management.
- **Alarms Icon:** Click this icon to view and manage any active alarms or notifications related to your devices.

2.2 MY PROFILE AND TEAM

2.2.1 My Profile

After logging in as the administrator, update your profile by adding the necessary information and changing your password.

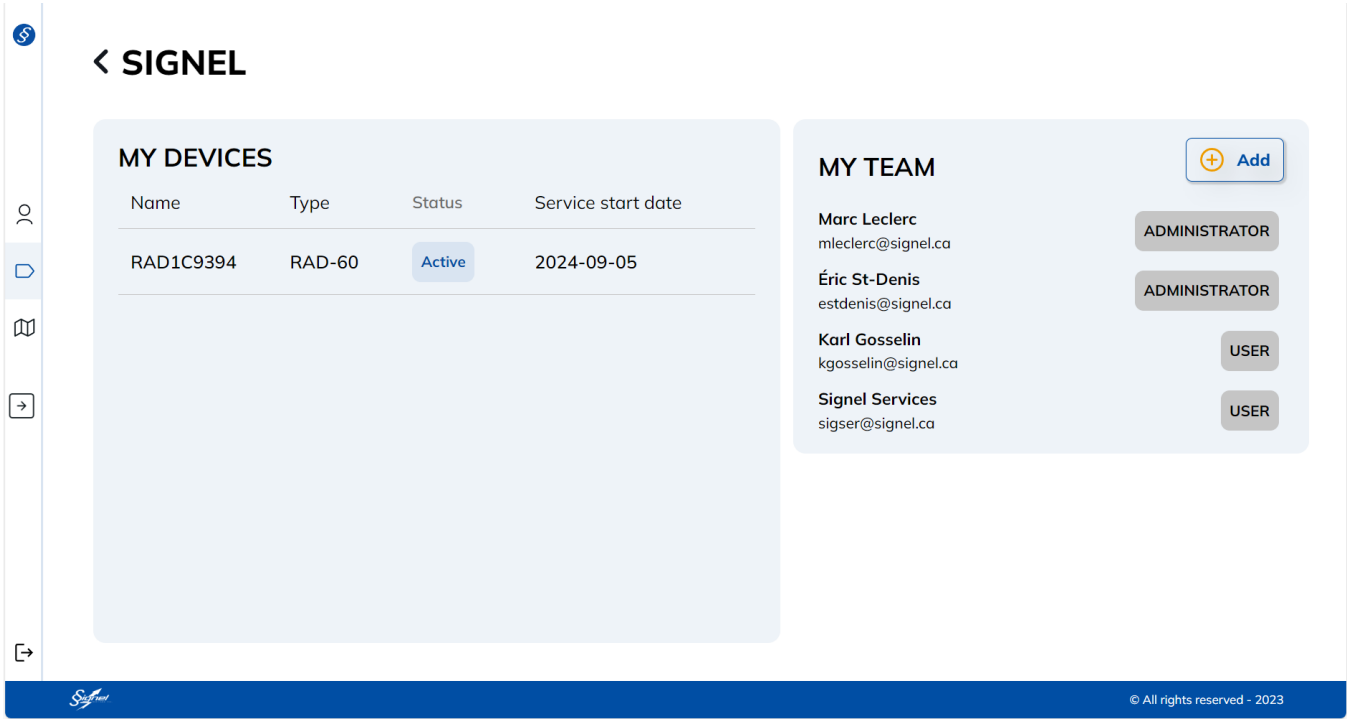
To do this, click on the **My Profile** icon, where you can update your information and switch between French and English



2.2.2 My Team

To create a team, follow these steps:

• Click on the **Dashboard** Icon

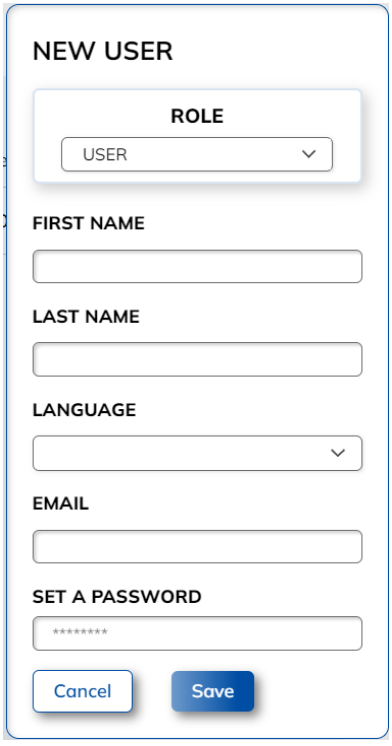


• Next to "MY TEAM," you will find an "Add" button.

To delete, modify, or change a team member's role, hover over the role to display the modify and delete buttons.

There are three types of users with set roles:

- **Administrator:** Has full access to add new users, define their roles, and modify device information, parameters, and report settings.
- **User:** Can change device information, adjust parameters, and modify report settings.
- **Reader:** Can access reports and modify report settings only

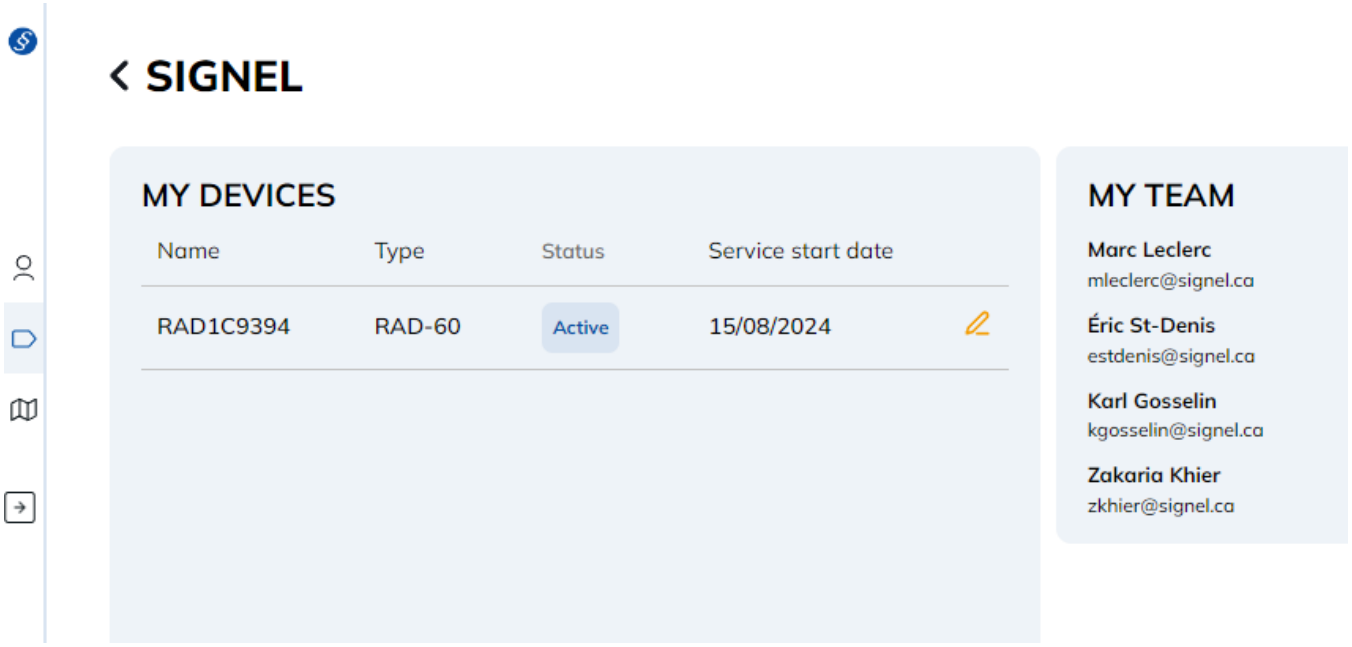


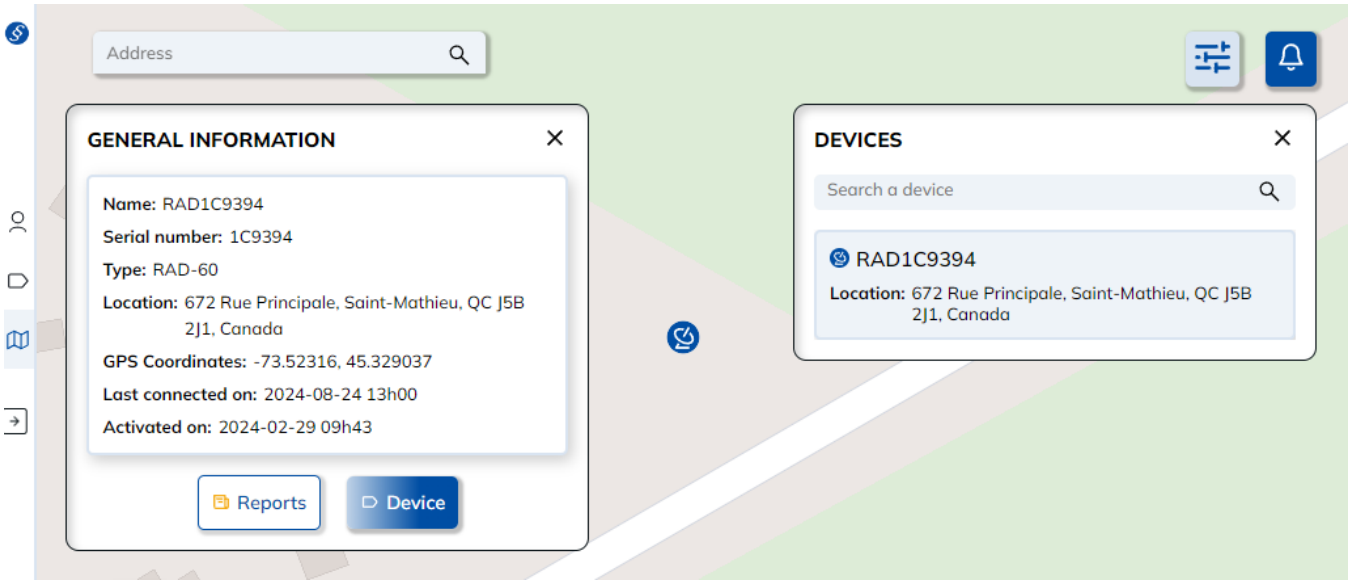
2.3 MY DEVICES

Access a device either through the **Dashboard list view** or from the **Map view**.

In the dashboard view, click the modification pencil to review the device information and adjust its operating parameters.

In the map view, either click the individual geographically located icon, or click the list icon to select among all your connected devices. In addition to device information and parameters, the report button gives you access to all data gathered while in service.

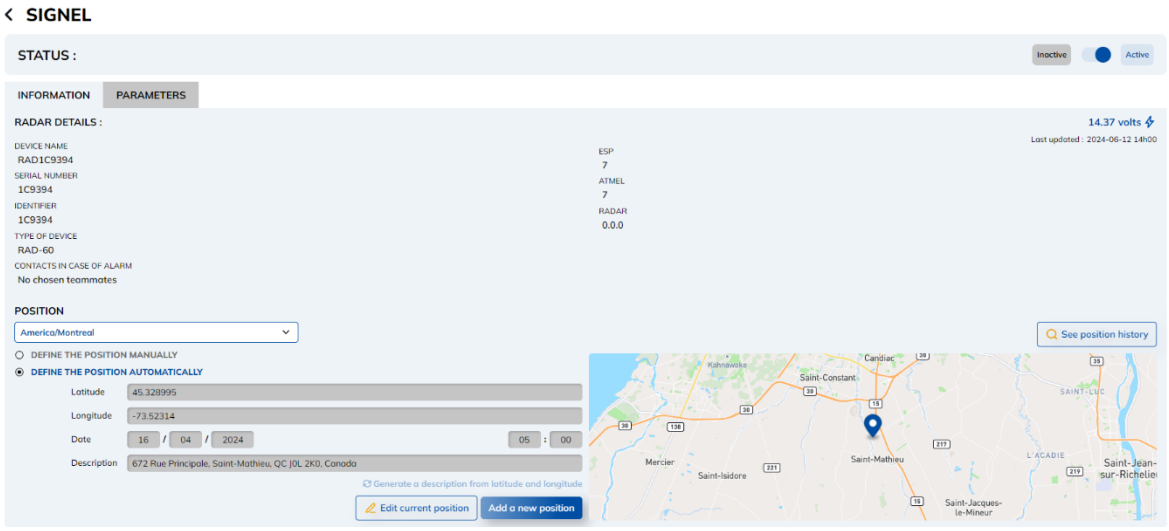




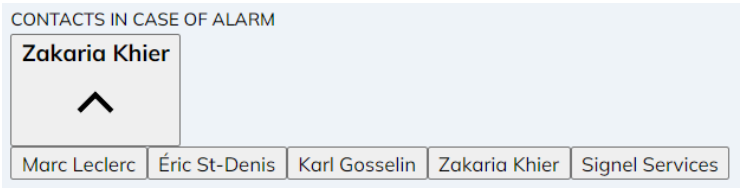
2.4 DEVICE INFORMATION

Here you can:

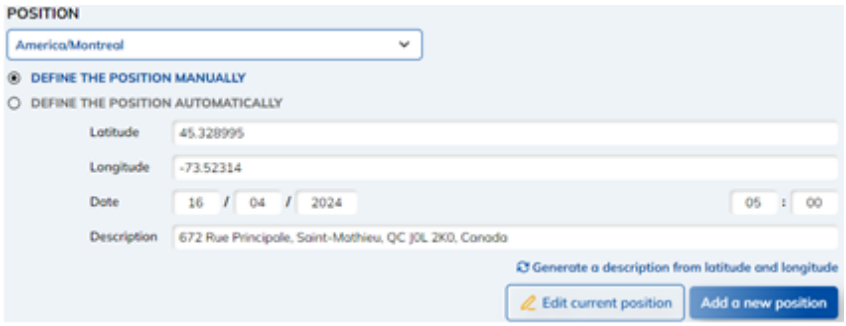
- Change the device name.
- Monitor the battery voltage in real-time.
- Access the position history of the device.
- Change its status from active to inactive.



- Set an emergency contact from the team:
  - To do this, click on "No chosen teammates" then click on the arrow underneath it. A list of your teammates will appear. Click on the designated person's name to select them as the emergency contact. Click on their name again to remove them.



Although you can manually set a position, it is not recommended, as the device is equipped with a precise GPS



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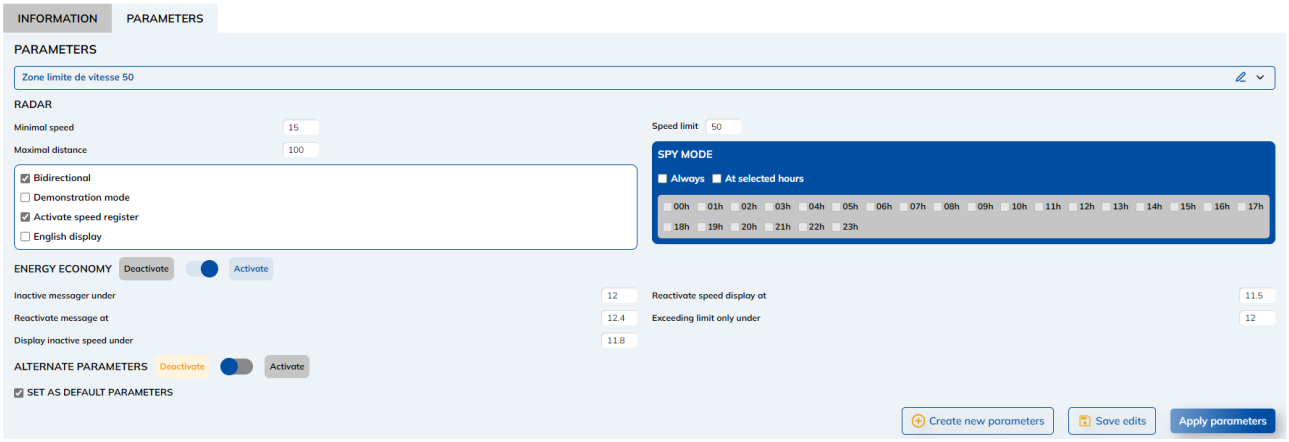
2.5 DEVICE PARAMETERS

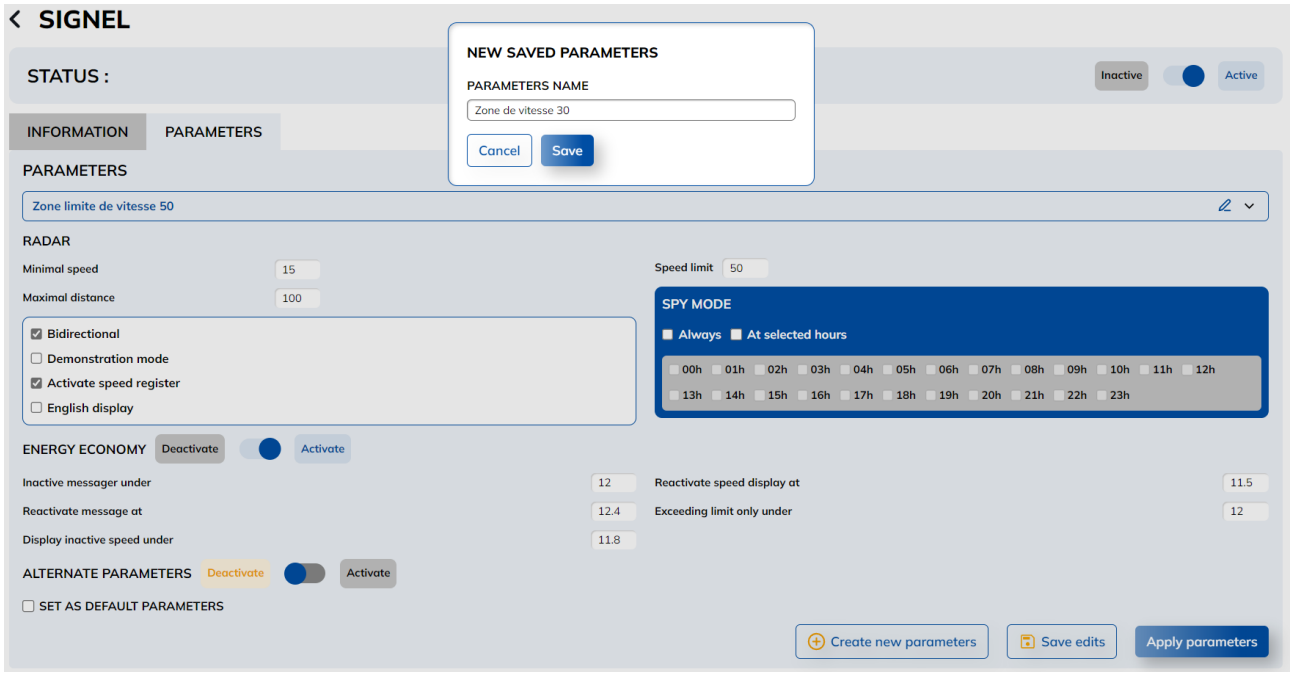
Customize the device's behavior with a wide range of settings.



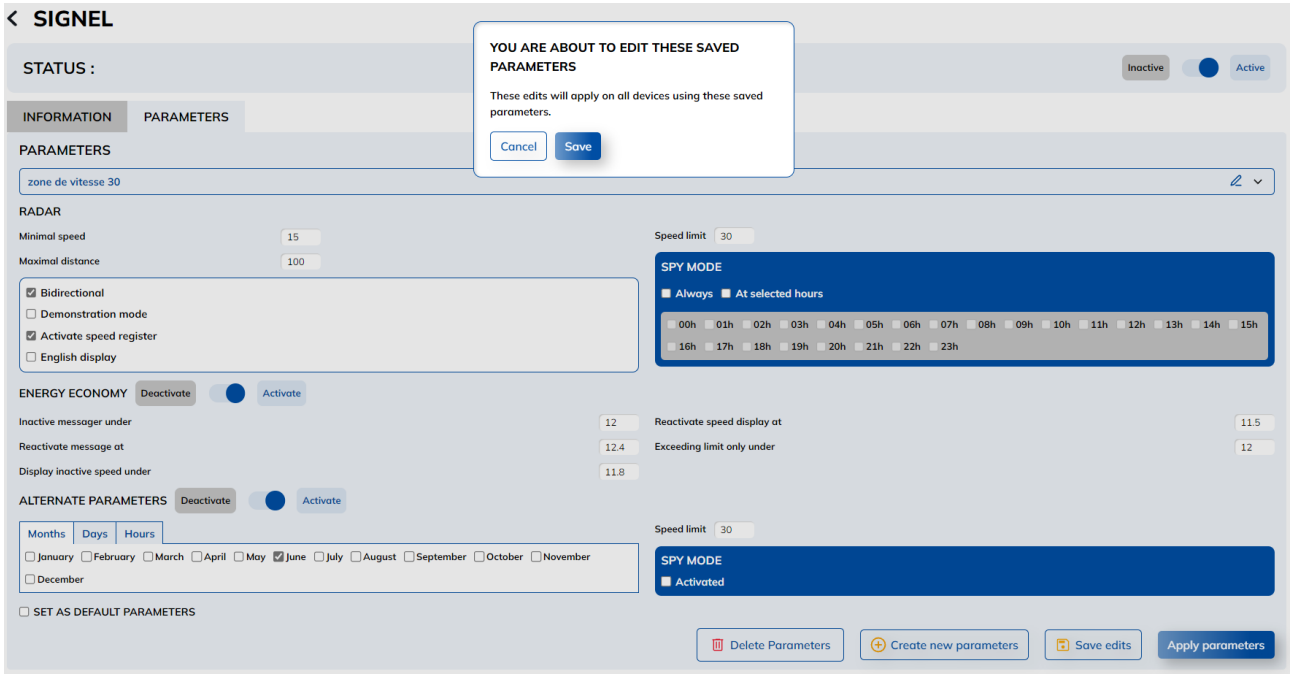
2.5.1 Parameter files

To set multiple parameters on the same device, click on ‘‘Create new parameters’’.

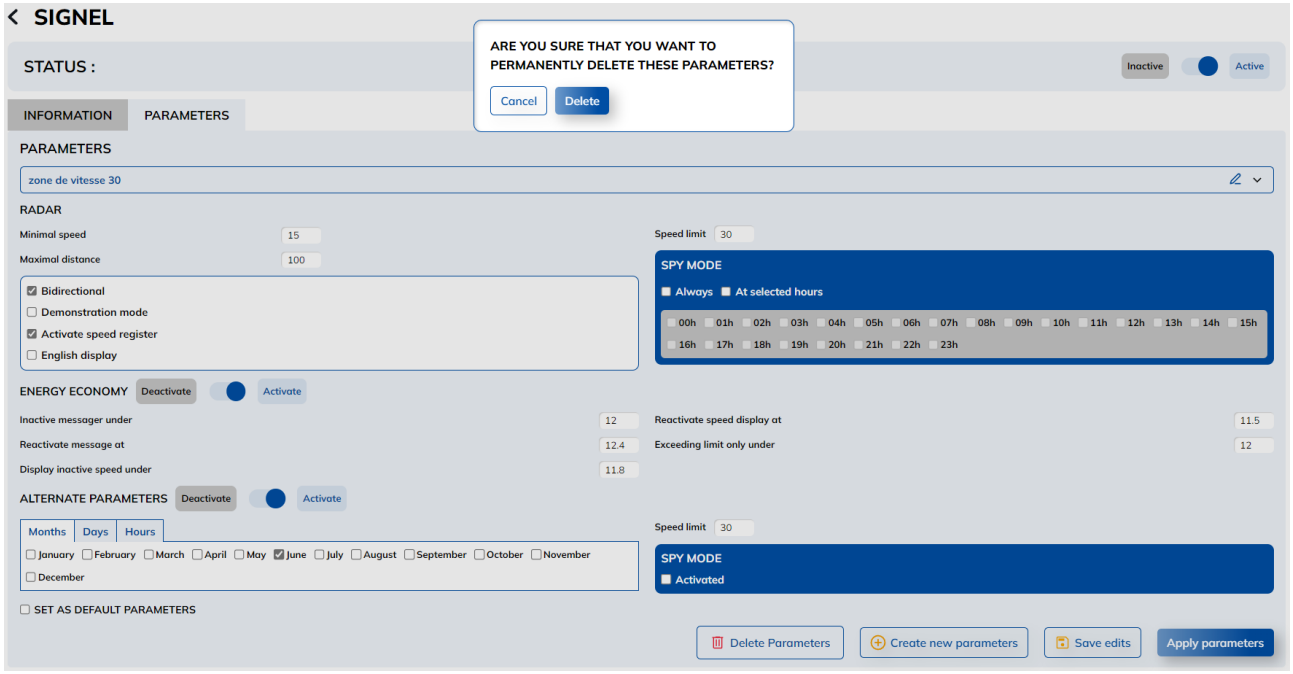
choose appropriate name for designated zone and click on ‘‘Save’’.



After each modification, click "Save edit" to save the parameter.



If you add a wrong parameter, click "Delete Parameters" to remove it.



Click "Apply parameters" to activate these settings on the device.

Click "SET AS DEFAULT PARAMETERS" only for the parameter that matches the designated zone limit.

2.5.2 Radar display

The display tab includes the following parameters:

2.5.2.1 Speed Interval*:*

Configure the radar to operate within a specific speed interval.

The speed limit must match to the designated zone limit, and the minimum speed is the lowest speed at which the radar is set to capture.

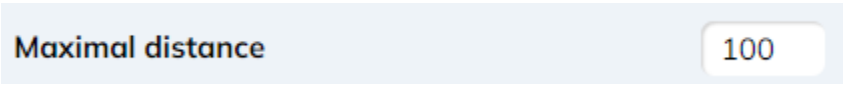
The radar will only display speeds that are below the Display Limit, which sets the maximum speed shown on the radar. This parameter is linked to the speed limit, meaning each speed limit has its own display limit. Speeds exceeding this limit will be recorded but not displayed, helping to prevent the sign from being used as a “show-off” tool.

The radar will only display the following messages, which cannot be changed:

- Thank you: if the driver’s speed is below the speed limit
- Slow down: if the drivers speed is above the speed limit

2.5.2.2 Detection Distance:

Adjust the maximum distance at which the radar can detect vehicles.



2.5.2.3 Display Modes:

The radar offers several modes:

- **Bidirectional:** means it can detect the speed of vehicles traveling in both directions.
- **Demonstration mode:** displays speeds randomly, with messages and speeds.
- **Active speed register:** it means that the data is constantly being registered.
- **English display:** this must be activated to display an English message

2.5.3 Energy economy

To optimize autonomy, we recommend keeping the energy economy mode activated.

This mode includes load shedding, which reduces power consumption by temporarily turning off non-essential components when energy levels are low. By doing so, the radar can continue to function for extended periods, even in less optimal power conditions.

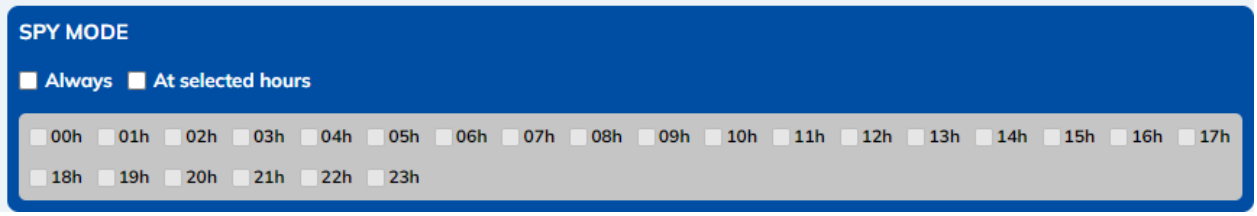
You can also adjust the following parameters to better manage energy use:

- Inactive message under 12
- Reactivate message at 12.4
- Display inactive speed under 11.5
- Reactivate speed display at 11.8
- Exceeding limit only under 12

2.5.4 Spy Mode:

Set the radar to operate in spy mode:

- **No Spy Mode:** Standard operation with display and logging.
- **Always:** Operates silently with no display but continues logging data.
- **At selected hours:** Configure specific times for spy mode activation.



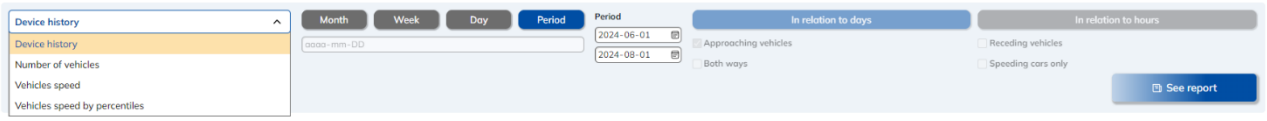
2.5.5 Alternate parameters

If the device is placed in a location with two speed limits, select the months, days, and hours during which the device should operate under alternate parameters.

2.6 REPORTS

Click on the device then ‘‘Report’’ icon to directly access the interface where you can view all collected radar data.

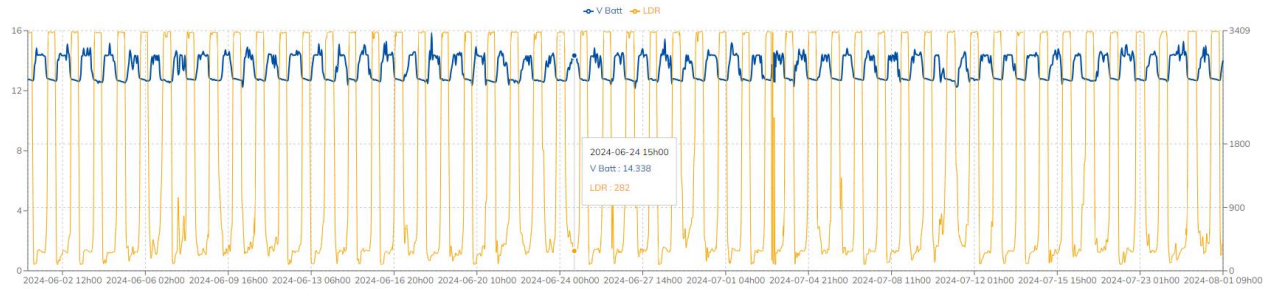
Depending on the settings of parameters you have chosen, the chart shall appear once you click on ‘‘see the report’’.



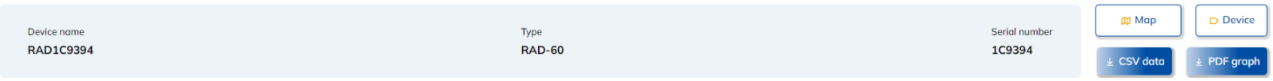
2.6.1 Device history

Select ‘‘Device history’’ for the past two months to view collected data on battery voltages and light intensity measurements from the LDR over the selected period. You can also choose various time settings, such as month, week, day, or a custom period. Depending on the selected settings, you can view the data in relation to the days and hours.

Hover the cursor over a specific point to display its exact values.



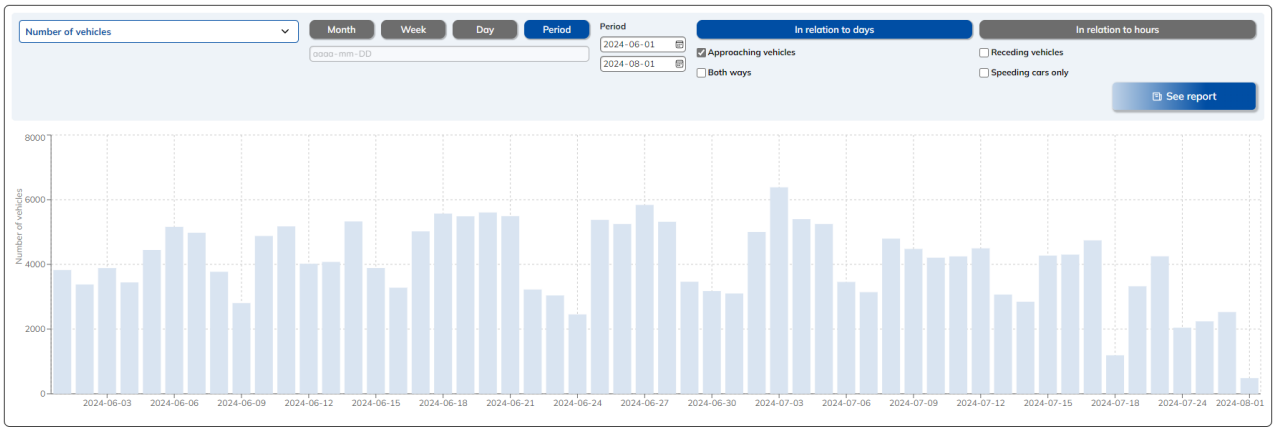
Afterward you download it in a PDF format by clicking on ‘‘PDF graph’’ or an Excel of the CSV data by clicking on it.



From here, click on ‘‘Map’’ to return to the map that displays all your devices or click on ‘‘Device’’ by clicking or continue with this specified device parameter.

2.6.2 Number of vehicles

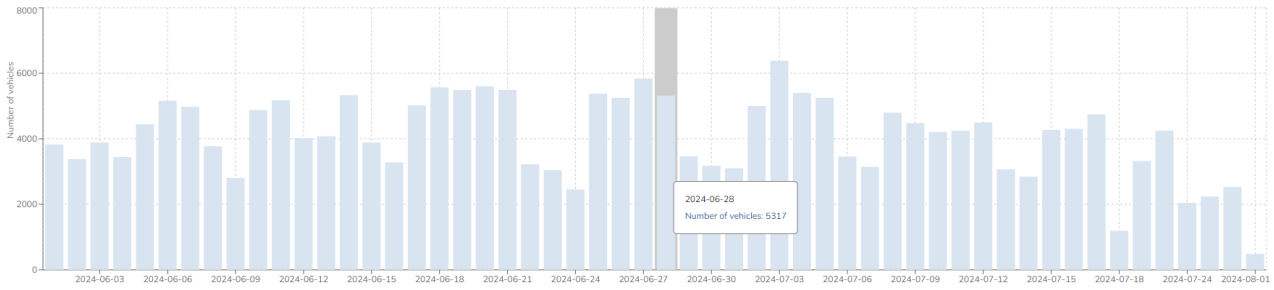
Select ‘‘Number of vehicles’’ to generate a chart displaying the total number of vehicles; in this case approaching vehicle; detected by the radar over the selected period. You can also choose various time settings, such as month, week, day, or a custom period. Depending on the selected settings, you can view the data in relation to the days and hours.



Choose from various settings based on the data you need:

- Approaching vehicles
- Receding vehicles
- Both ways
- Speeding cars only

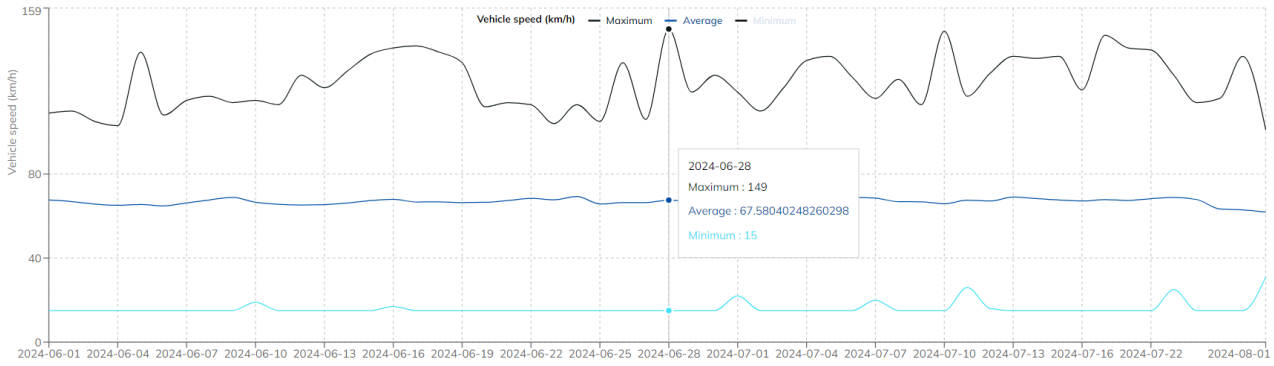
Hover the cursor over a specific point to display its exact values.



2.6.3 Vehicles speed

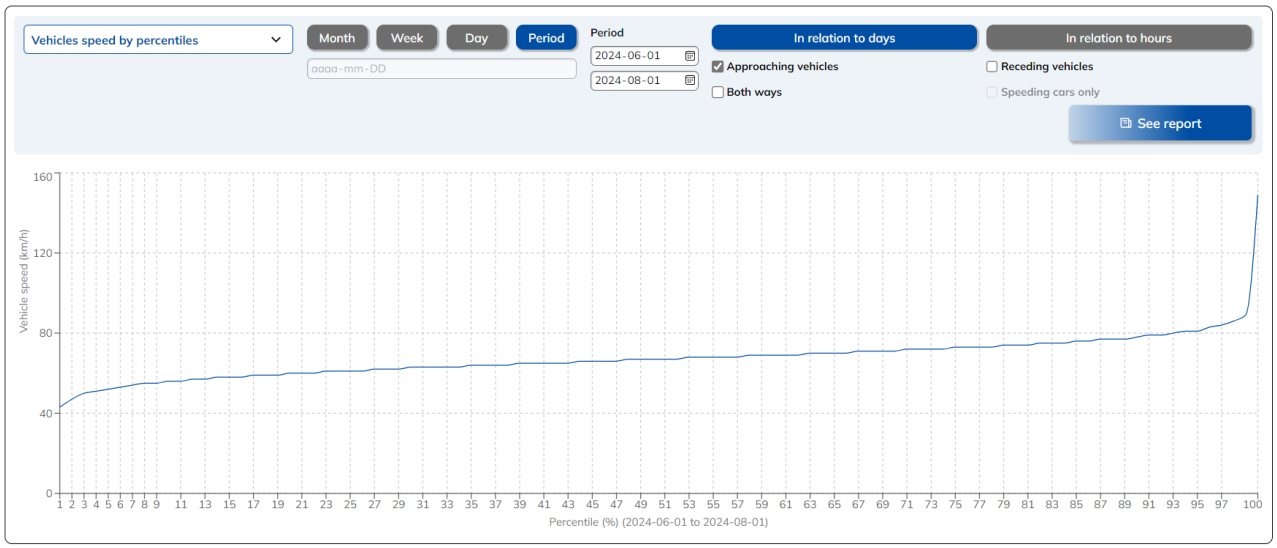
Select ‘‘Vehicle speed’’ to generate a chart displaying the maximum, average, and minimum speeds of approaching vehicles over the selected period. You can also choose various time settings, such as month, week, day, or a custom period. Depending on the selected settings, you can view the data in relation to the days and hours.

Hover the cursor over a specific point to display its exact values.

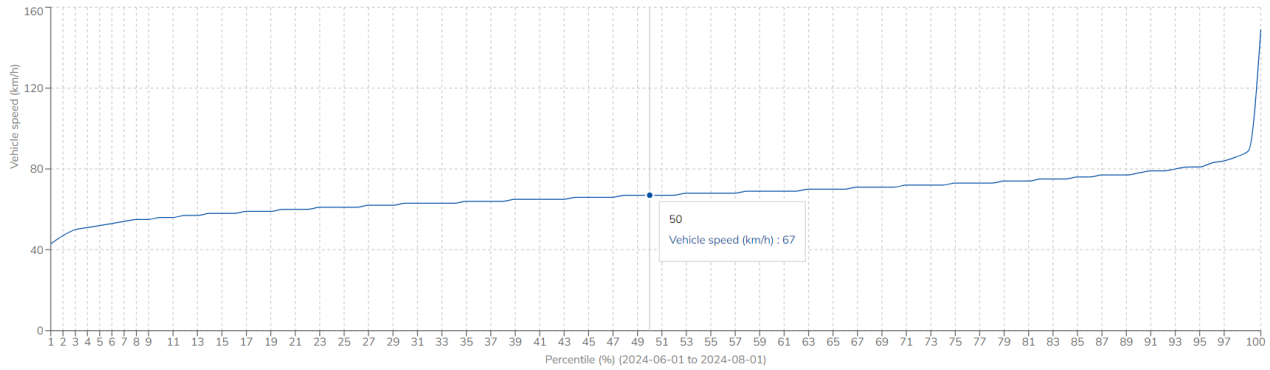


2.6.4 Vehicles speed by percentiles

Select ‘‘Vehicle speed by percentiles’’ to generate a chart displaying the distribution of vehicle speeds over the selected period. You can also choose various time settings, such as month, week, day, or a custom period. Depending on the selected settings, you can view the data in relation to the days and hours.

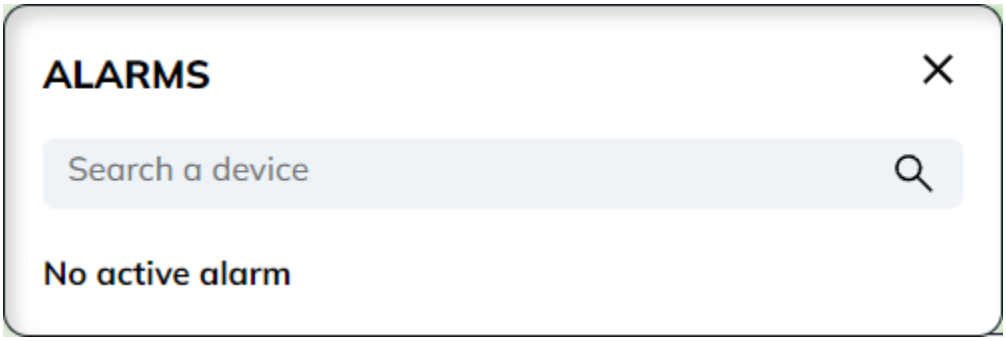


Hover the cursor over a specific point to display its exact values.



2.7 ALARMS

In the event of an alarm, a notification will be prominently displayed at the designated location.



3 RAD60 TECHNICAL DATA

Radar	
Precision	+/- 1.5 km/h
Speed range	10 km/h to 250 km/h
Detection range	10 ~ 250 m
Frequency	60 ~ 64GHz
Beam width	26º horizontal, 17.2º vertical
Power supply	11 VDC to 14.5 VDC
Approval	IC: 26970-RM68SE FCC: 2AVKZRM68-SE
Display	
Speed	Green, Amber and Red colors 330 x 465mm (13.0” x 18.4”) 7-segments
Message	Monochrome Amber 160 x 640 mm (6.30” x 25.2”) 64x16 pixels, full matrix
Viewing angle (Iv 50%)	25º Around central axis 50º total
Enclosure	
Front	Polycarbonate 1/8’’ (3.2mm)
Body	ABS, UV resistant
Ingress protection	IP65
Dimensions	Height: 29.1’’ (740mm) Width: 28.7’’ (730mm) Depth: 4.0’’ (100mm)
Weight	12 lb (5.5kg)

4 DOPPLER RADAR

This device is certified by Industry Canada (IC) for license-exempt operation.

Operation is subject to the following two conditions:

1. This device must not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with IC radiation exposure limits set for an uncontrolled environment. End users must follow specific operating instructions to ensure RF exposure compliance, such as ensuring that the module is not installed in equipment intended for use within 20cm of the body.

The transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Changes or modifications not expressly approved by Signel Services Inc. may void the user's authority to operate the equipment.

5 TROUBLESHOOTING

NOTE

- There are no internal components serviceable by the user.

Problem

- No display.

Solution

- Check that the radar speed display parameters is not set to <Spy mode>.
- Check that the battery voltage is not in a power shedding range.
- Check the radar speed sign fuse is in working condition and verify that there is 12 VDC at the power supply connector.

Problem

- Late vehicle detection.

Solution

- Radar range can be raised in the radar parameter tab of the cloud interface.
- Check that the radar display sign is oriented properly without obstruction.

Problem

- Missing or erroneous speed log entries.

Solution

- Check that speed logging is enabled.
- Check that the clock is set properly.
- Check that the radar display sign is oriented properly without obstruction.

For more information or technical support, please contact us.

Signel Services | Équipements de Signalisation Routière
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