

# CARMINAT

## NAVIGATION AND COMMUNICATION

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The function of the Carminat Navigation and Communication system is **to guide the driver** throughout his entire journey in the most efficient way possible at the same time as responding to traffic conditions by suggesting an optimised itinerary.



› Safety

› Environment

› Life on board

› **Mobility**

› Competitiveness

## THE BASICS

**Renault is a pioneer in the field of navigation systems.** Back in 1995, the Group was already offering the Carminat navigation system on a limited-series Safrane. Today, all Renault vehicles, depending on the version, can be fitted with a navigation system. The newest of these systems, the Carminat Navigation and Communication system, is distinguished by its ergonomic design, highly intuitive access to settings and the information displayed on its wide colour screen located high on the dashboard, and

the response it provides to traffic conditions. "BirdView" can supply an overview of an itinerary, as if it were seen from a plane, while pinpointing the position of the car and indicating the route to follow. Of course, although BirdView gives a particularly vivid and attractive representation for an overview of the journey, it is not explicit enough when dealing with an intersection, roundabout or junction to deliver the information needed by the driver. Approaching one, the view zooms in automatically. One third of the

screen displays a small scale map giving the exact position of the car and the remaining two thirds show a detailed representation of the intersection or roundabout. A highlighted arrow lets the driver follow his movement through the intersection in real time. For motorway interchanges and exits, the new Carminat system also has a "motorway intersection" function. This provides a real photographic image of the area – the image displayed on screen is exactly what the driver is seeing on the road. Once again,

## IN SHORT

CARMINAT RELIES ON ERGONOMICS AND INTUITIVE PRESENTATION OF INFORMATION. THE WAY THE ROAD IS REPRESENTED IS AUTOMATICALLY ADAPTED TO EACH SITUATION DELIVERING OPTIMAL READABILITY. THE SYSTEM IS CAPABLE OF CALCULATING SEVERAL ITINERARIES SIMULTANEOUSLY AND THEREFORE CAN ALSO DETERMINE AN ALTERNATIVE ROUTE DEPENDING ON THE TRAFFIC MANAGEMENT INFORMATION IT RECEIVES FROM TRAFFIC INFORMATION. WHEN A DESTINATION IS SELECTED, THE SYSTEM OFFERS THREE ALTERNATIVE ROUTES – THE SHORTEST IN DISTANCE, THE FASTEST IN TIME, OR THE LEAST EXPENSIVE AVOIDING TOLL ROADS.

a highlighted arrow appears, clearly indicating the direction to take. Throughout the entire journey, synthesised voice technology constantly informs the driver of which direction to take so that it is not necessary to constantly look at the information presented on the screen.

The screen is there so that, with a single glance, the information the voice synthesis delivers can be visualised. In addition, the Carminat system takes account of traffic information. In the event of a major tailback or accident, it can suggest an alternative itinerary.

Furthermore, even if the driver does not wish to be guided during his trip, the screen will constantly display traffic congestion information for the area he is passing through. At any time, this information can be used to avoid running into a tailback.

## HOW DOES IT WORK?

**The Carminat system** is based principally around four elements: a cartographic database, a GPS unit, special sensors placed on the vehicle, a computer and, of course, a display unit. In addition, to further improve ergonomics, it has a voice recognition command module and a conveniently placed centralised console that is particularly simple to use. The cartographic database of the 23 countries of Europe is supplied on a **DVD-ROM**. It contains an index of all the roads and city streets, including all names plus extra information such as hotels, places of interest, etc., which can be upgraded year by year to take account of changes to the road infrastructure. The **GPS (Global Positioning System) unit** indicates the vehicle's position to the system computer. From this, the computer

localises the vehicle on the map and, calling up the data on the DVD-ROM, displays the corresponding image on the screen. At the same time, the computer automatically determines which type of image to display depending on the driver's choice – a BirdView display, a zoom or a JunctionView – and then modifies the mode of representation in real time in order to keep pace with the movement of the car. The computer also manages the voice synthesis unit, activating it as soon as it considers that a direction indication is important for the driver. However, the GPS receiver is not always capable of delivering a position. Tunnels or some narrow city streets may prevent it receiving information from the satellites on which the system is based.

built-in gyroscope. Even when the GPS reception is active, these extra sensors are vital as they make it possible for the system to check that the driver has actually followed the route that was calculated. For example, if he misses his exit at a roundabout, the system detects this from the discrepancy between the compass direction that was computed and that taken by the car. The computer then immediately determines the best itinerary to get the driver back on course to his destination.

Finally, earning its designation as a **Navigation and Communication System**, Carminat also comprises a top range audio system (MP3 player, front-loading 6-CD changer) and a Bluetooth hands-free mobile phone accessory. Access to all of these functions is either directly through manual controls (finger-tip control, facade keypad for the audio, central console) or voice recognition command (only for the telephone). So that the driver knows clearly which configuration he is using – audio, navigation or telephone – the predominant display colour changes. Green menus indicate telephone mode, a blue menu is radio mode and red menus correspond to navigation mode.

To help deal with these interruptions, it gets information from **specific sensors** that are placed on the car. The distance driven by the vehicle is calculated from ABS sensors placed on the wheels and changes of direction from a

