IN-VEHICLE DISPLAY SYSTEM

[0001] This invention relates to improvements in vehicle display systems, and in particular to an in-vehicle display system which is arranged to display to a driver of the vehicle a range of information relating to a plurality of vehicle operational systems.

[0002] The number and types of vehicle operational systems that are available to a driver are increasing every year. In the past a driver of a vehicle may have been happy to own a vehicle equipped with a climate control system and a radio. Many drivers now demand cars that are also fitted with navigational aids such as satellite navigation systems, driver aids such as cruise control, and communication systems such as a telephone.

[0003] As the number of operational systems increases, a corresponding increase in the number of switches and buttons needed to control the systems becomes necessary. This can be distracting to the driver. The number of individual displays needed to present to the driver information relating to each system is also increased. For instance, a display of vehicle temperature, position, cruising speed and radio preset may all be required during a journey.

[0004] To reduce the number of displays and switches required to operate the systems it is known to provide an in-vehicle display system which can be configured to display information relating to a chosen system and, at the request of the driver, switch to display information relating to a different system. A number of multi-function switches may be provided which allow the user to choose which system (and functions of that system) is to be displayed and also to control the system that is displayed. A single switch may have a number of different functions which vary depending on the system being displayed.

[0005] Typically, in-vehicle displays of the kind set forth are arranged to be viewed by the driver in either a centre console position or are arranged in close proximity to the driver in the dashboard. The switches that control the display and the systems which can be displayed are positioned around the display. In some arrangements, the display comprises a touch sensitive screen. This allows areas of the display to define one or more buttons that are activated as the driver applies pressure to the pre-selected area of the display.

[0006] In currently known systems the visible region of the display has either a square or a landscape aspect ratio, i.e. the horizontal dimension of the rectangular display is greater than the vertical dimension. This format is used to relay the varied graphical information to the driver under the control of locally situated switching devices. By convention, the switching devices are positioned along side each vertical edge of the display. This arrangement has been found to be preferred as switches positioned along the horizontal edges (top and bottom) cause the screen to be obscured by the users hands during operation.

[0007] A problem with in-vehicle display systems of this kind has been observed under certain operating conditions. For example, if the driver of a vehicle is making intensive use of one system-such as satellite navigation—but wants to occasionally make use of a different system-such cruise control—the navigation information must be temporarily lost from the display in exchange for the cruise control information. This can be very distracting for the driver.

[0008] It is an object of the present invention to provide an in-vehicle display system that ameliorates this problem.

[0009] In accordance with a first aspect the invention provides an in-vehicle display system which is configured to display information relating to at least a first vehicle operational system and a second vehicle operational system, the display system comprising a display panel defining a main display portion and one or more user input devices, whereby in at least one mode of operation the main display portion is split horizontally into an upper and a lower region, information relating to the first operational system being displayed in the upper region and information relating to the second system being displayed in the lower region.

[0010] By dividing the main display portion horizontally into two regions the display can present to the user information relating to two systems simultaneously. The display is therefore less distracting when used to control two systems.

[0011] The upper and the lower regions may be of the same size. Alternatively, the main display portion may be split horizontally so that the height of the upper region is different from the height of the lower region.

[0012] It is also possible that the screen may be split into more than two regions when required.

[0013] A plurality of input devices may be provided along at least one vertical side, and preferably both vertical sides of the main display portion. The input devices along a respective side may be aligned vertically one above the other and may be equi-sized and equi-spaced. At least one input device on each side may be aligned horizontally with the upper region and one aligned horizontally the lower region of the display. By this we mean that a switch is wholly contained within an area defined by an extension of the vectors defining the top and bottom horizontal edge of a region.

[0014] In a most preferred arrangement, six buttons are aligned alongside each side of the display, three buttons being aligned horizontally with the upper region and three with the lower region of the display. Other arrangements are, of course envisaged, such as two columns of four switches, each column being split into two pairs. More buttons may be associated with the upper region than the lower region, or vice versa.

[0015] The main display portion may show a label associated with each input device which indicates to the driver the function of the input device at any instant in time. By varying the label the user always knows the function of a multi-function switch. The label may comprise text information, or a symbol or a combination of the two.

[0016] A unique set of labels may be defined for each vehicle operational system that is displayed and/or controlled by the in-vehicle display system.

[0017] The input devices may comprise discrete switches or buttons. In this case the labels may be presented in the appropriate upper or lower display region alongside each button or switch. Of course, not all of the switches or buttons may have a function for every operational system and may be left without a label to show they have no function. A "button inactive" label may be displayed if preferred or the colour/intensity of the label may be varied, i.e. "greyed out".