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**Certification**

**Park IP Translations**

This is to certify that the attached translation is, to the best of my knowledge and belief, a true and accurate translation from French into English of the patent entitled: DEVICE FOR THE MEASUREMENT AND REMOTE TRANSMISSION OF DATA, AND VEHICLE CONTROL SYSTEM INCLUDING SUCH A DEVICE.

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(60) **References to other related French documents:**

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(54) **DEVICE FOR THE MEASUREMENT AND REMOTE TRANSMISSION OF DATA, AND VEHICLE CONTROL SYSTEM INCLUDING SUCH A DEVICE.**

(57) The device (TE) includes remote emitter means (8) associated with a receiver (10). It is characterized by:

– Angular location means (2) that provide an angle ( $\Theta_{P,N}$ ) between a pointing direction (P) of the device and an absolute reference (N);

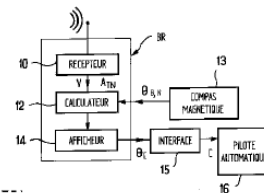
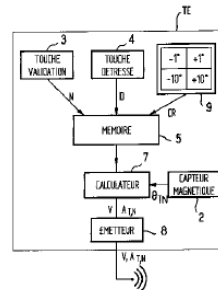
– Means (3,4,5,9) for the validation, by the person using the device (TE), of a digital validation datum (V) that is representative of a given operating situation (N) (D) (CR); and

– Computation means (7) for converting the said angle ( $\Theta_{P,N}$ ) into a digital datum ( $A_{P,N}$ ), with the said emitter means (8) transmitting the said digital datum ( $A_{P,N}$ ) and the said digital validation datum (V) to the said receiver (10).

The system according to the invention includes a device (TE) of this type; receiver means (10) associated with the remote emitter means (8); and an interface (15) between the receiver (10) and the autopilot (16) of the vehicle.

The device is used, in particular, for the rescue at sea of a person who has fallen overboard, or by a person on board the vehicle in order to perform a course change.

It is applicable to solo navigators.



FR 2 789 765 - A1



“Device for the measurement and remote transmission of data,  
and vehicle control system including such a device”

### DESCRIPTIVE SPECIFICATION

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The present invention relates to a device for the measurement and remote transmission of data that is useful for the control of a vehicle, particularly in the case of a rescue at sea. The invention also relates to a vehicle control system that includes one or more devices of this type, and a receiver located on board  
10 the vehicle.

The procedure generally used for the rescue of a person who has fallen overboard at sea consists of having the victim launch a distress beacon that is carried on his person, or a distress beacon that is automatically launched upon contact with the water, with the said beacon being detected, for example, by a  
15 satellite. The position of the person who has fallen overboard is then communicated to the appropriate rescue center and the nearest vessels are dispatched to find and recover the person who has fallen overboard.

Another solution, which may be supplemental, is described in document DE 19503829. This solution employs a device that is carried by the person who  
20 has fallen overboard and that is capable of issuing a rescue signal that is received by a receiver located on board the boat. The receiver is linked to the autopilot of the boat, which is programmed to initiate, in response to the rescue signal, a stopping maneuver, such as, for example, the dropping of the anchor of the boat, such that the crew members can then come to the rescue of the person  
25 who has fallen overboard by performing an approach maneuver.

The goal of the present invention is to propose a reliable, simple, and economical solution of this type for the rapid execution of a rescue at sea, which solution is equally applicable to solo navigators who have fallen overboard and whose boat is equipped with an autopilot.

30 The invention proposes a device for the measurement and remote transmission of data that is useful for the control of a vehicle, including, in

particular, for the rescue at sea of a person who has fallen overboard, which device includes remote emitter means associated with a receiver located on board the vehicle, characterized by:

- 5       – Angular location means that provide an angle between a pointing direction of the device and an absolute reference;
- Means for the validation, by the person using the device, of a digital validation datum that is representative of a given operating situation; and
- Computation means for converting the said angle into a digital datum, with the said emitter means transmitting the said digital angle datum and the said  
10     digital validation datum to the said receiver.

Thus, thanks to the invention, the angle formed between the pointing direction of the remote control and an absolute reference can be measured and can then be transmitted to the receiver located on board the vehicle. This measurement, along with the known value of the angle formed between the  
15     course being followed by the vehicle in relation to the said absolute reference, makes it possible to calculate a set course to be mandated for the vehicle.

In an advantageous manner according to the invention, this ability to change the absolute course can be employed by a person who has fallen overboard in order to cause the vehicle to return to him and to stop (for example, with the sails  
20     lowered and facing into the wind, for a sailboat), and also by a person on board the vehicle, particularly to perform a sudden course change in order to avoid an unforeseen obstacle.

In the first of these situations, referred to as the “distress” situation, the remote control is carried by the person who has fallen overboard, who points it  
25     toward the vehicle.

In the second of these situations, referred to as the “normal” operating situation, the person carrying the remote control is located on board the vehicle, and points remote control toward the new course to be followed. Within the scope of this second application, the device may also be used to point out, from  
30     the boat, a person who has fallen overboard.

The device according to the invention may also include incremental course-change means.

Thus, according to the invention, a multi-function device is advantageously offered.

5 For a person who has fallen overboard, the validation means provided by the device may consist of a sensor that is sensitive to the presence of water.

The course change may be ordered by the autopilot, which receives, via an interface and the calculation algorithm, a course-change instruction based on the type of situation (distress, normal operation, or incremental). The course change  
10 may also simply be displayed on the receiver housing, so that it can then be manually applied by a crew member to the helm or rudder of the boat.

A traditional supplemental signal – such as, for example, an alarm or a satellite transmission – may also be issued in order to alert the official rescuers.

The present invention is particularly advantageous in the case of a solo  
15 navigator. In such a situation, the autopilot will be programmed to perform a rescue maneuver in the direction of the solo navigator who has fallen overboard. This rescue maneuver will be faster and less expensive than the searches conducted by other boats or helicopters. Furthermore, the boat itself may also be recovered.

20 Yet another advantage of the device, when it is used for a course change on board the boat, is that it offers, in comparison with conventional wire-based remote controls, great freedom of movement from one end of the boat to the other, particularly for a solo navigator.

The present invention also proposes a vehicle control system that includes  
25 an automatic pilot, remote emitter means, associated receiver means, and an interface between the receiver and the autopilot, characterized in that the said system includes one or more remote control devices, for example, one for each crew member, each of which is equipped with the said remote emitter means. More specifically, the system includes a magnetic compass that is capable of  
30 measuring the angle between the course followed by the vehicle and the absolute reference; a computer that is capable of calculating the angle of the

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