

# Infraredseatsensor passenger detection system for taxis and hired cars

Service manual and  
installation advisor



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Ruf: 0441 - 15000

! Safety instructions !	! Important !
1	By installing this system inside a land mobile vehicle, you can affect the cars safety system, consisting out of electrical and mechanical components as well. Be sure to make yourself confident will the handling of this system by contacting the manufacturer or the responsible distribution of the car.
2	Placing additional cables inside a vehicle can restrict the function of some air bag safety systems. Be aware not to put your cables in the expending direction of these devices.

## Infrared Seat sensor system:

### technical description:

#### advantages against other systems

The infrared seatsensor system is working based on two or three infrared beams being emitted by means of a transmitter and received by a special photoelectric sensor.

To make the system resistant against environmental influences, datawords are being transmitted and must be received correctly.

Under the condition that there is any person seated inside the beam or some other subject, the processor inside the control logic decides to put its output into an occupied state.

Any device connected to this output can take this information for being switched on, like a taximeter, or simply registrates the information for administration.

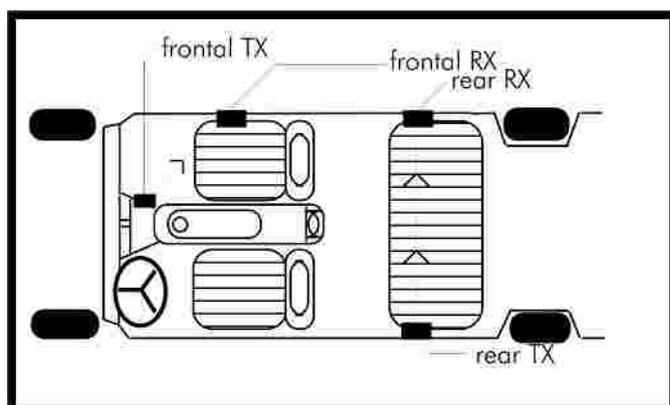
Even the handling of a taximeter can be simplified by usage of the seat sensor system. The driver won't ever forget to switch the taximeter to occupied.

Fraud can be suppressed very easy and in a very efficient way.

The control unit is capable to control 3 lines, that means three rows of seats inside the car.

The standard state of delivery is with two lines, that means two transmitters and two receivers.

Most recently all car manufacturers modernized their vehicles with safety systems like SRS or even with special children seats in the rear passager seats, which made the installation of older seat sensor systems being installed inside a seat, unreasonable. Even crossing the cars safety system with later taxi specific installations is not professional in any way.



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## **Manipulation**

Conventional seat sensors contain always the problem of being deactivated by interrupting the lines between sensor and the meter.

This system controls itself through an intelligent processor. It sends data words from the control device, which have to be received correctly.

In case this chain is not closed, the control unit reacts by giving the information of occupied state towards the following device. One of the two outputs is also working like an alarm systems chain. It is connected to ground as long there is no one inside the car. By changing this state it will open the chain to ground.

Even if this wire is cutted, the information being presented to a taximeter is containing the state occupied.

The system excludes automatically environmental influences like temperature and it compensates the environmental light. Variation effects of light are also being suppressed by the system

## **Functionality**

For best results of the systems functionality it is necessary to be very careful installing all components and even reading the instructions is helpful to be successful.

The adjustment of the pots should be made carefully. After some installations the installer will get a feeling of what can go wrong installing the sensors.

Even take into consideration that cars can be very different and the installation times can differ a lot, e.g. when not finding a good possibility how to get the cables through the doors rubbers, in case there is no additional space for your cable.

For good performance you need a perfect installation and even a constant supply voltage fulfilling the limitations.

Consider, after working half a day inside a car installing taximeter, radio and seat sensor, the cars interior light is mostly constantly on and has taken a lot power from the cars battery.

Afterwards testing the seat sensors, sometimes they are working well, sometimes malfunctioning, you will see the supply voltage of your cars is far below 12 Volts.

After an installation and before testing the sensors let the engine run for some moments to get a good state of the cars power supply.

## Sensors description

The transmitter is installed inside a 8mm metal cartridge. The cartridge is installed inside the cars doors panel

by means of drilling a 8mm hole on the right place inside the doors panel and putting the cartridge through. Than it must be fixed with the nut.

Always the cartridge must be showing exactly towards the receivers mouting place. After mounting the cartridge the transmitter can be clicked inside from backwards.

The line of the transmitter is connected inside the door with the doors plug.

Every sensor has a special 6/4 Western plug for placing under the doors panel. After a car accident e.g. this makes it very easy to take off the doors panel and work at the broken door.

The cable is put through the doors rubber and drawn up under the cars dash board. When no car specific installation manual is available, you must look yourself for a good place of the control unit.

All cables delivered in combination with this system, have a specific length. Every cable is signed with even its own color to make it easy to put the endings of the cables into the right plug inside the control unit.

The corresponding color is printed on top of the label of the control box and shows the right slot for every sensor.

**! Do not cut the length of the cables below 2.5 meters / app. 100 inches !**

The receiver is installed inside a plastic housing with an outmost diameter of 14mm / 5,5 inches.

It is important to put the receiver exactly at the recommended installation place. If there is no recommendation, please look for yourself a perfect place. There must be enough space behind the sensor inside the doors panel for the cable, and the receiver must have good straight sight towards the transmitter.

The receiver is clicked inside its mounting hole, so take care of the exact size of you drill.

Behind the doors panel the receiver is also connected to a western 6/4 plug, to make it accessible for later service.



dimensions receiver:

length 35mm/ 13,8 inch. diameter 14mm/ 5.5 inch.

You can obtain receiver cables with different dimensions: 2.5 meters / 100 inches  
3.8 meters / 150 inches  
5.0 meters / 197 inches

## electrical characteristics and ratings

supply voltage	10 .. 16 V DC
power consumption	Max.: 350 mA
temperature range	0 .. + 85 Grad Celsius or 32 .. 185 F
2 Outputs	1 * interrupted ground when active 1 * ground when active
ouput bearing	0.5 A max.
maximum connection of three pairs of sensors possible.	

### **Control unit:**

The control unit has a very stable plastic housing with all transmitter connections on one side and the receiver connections on the composite side.

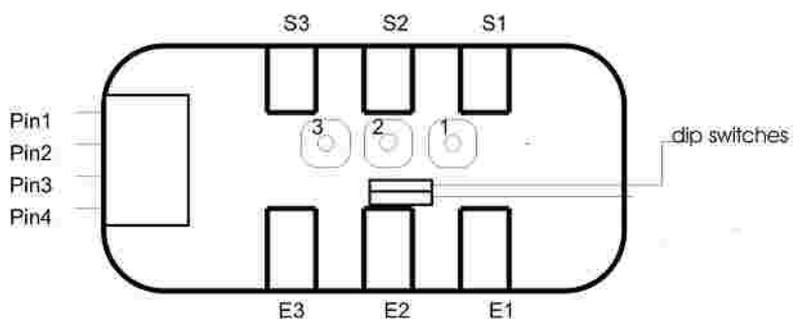
In the sceme the power supply conenctor/ cable is on the left side. It has for pins with the meaning described beneath.

<b>Pin 1 red</b>	:	+ 12 V ignition sense
<b>Pin 2 blue</b>	:	output ground when no passanger
<b>Pin 3 yellow</b>	:	output ground whe passanger
<b>Pin 4 black</b>	:	supply gnd

S1	:	Transmitter 1
S2	:	Transmitter 2
S3	:	Transmitter 3

E1	:	Receiver 1
E2	:	Receiver 2
E3	:	Receiver 3

# seat sensor control unit



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## First test and adjustment:

After being connected to an adequate power supply the control units LED(red) on top its board will flash. Count the number of flashes.

1 flash	1 pair sensor active
2 flashes	2 pairs sensors active
3 flashes	3 pairs sensors active
4 flashes	4 special mode.

Open the control box put demounting the four screws underneath the bottom of the housing. Like shown in the drawing you will find 2 small dip switches on top of the board. Change the position of the switches and repower the system again until the system indicates with 1 flash that it is working with 1 pair of sensors only.

Now only the pair connected to S1 and E1 is active.(drawing)

Close the cars doors and watch the reaction of the red led on top of the board. If it is going off everything seems pretty for the first moment.

Turn the pot 1 clockwise to its final position. The expected reaction is that the red led is now on and shows red light.

Now turn the pot 1 counterclockwise 1/3 of its full turn and wait for approximately 2 seconds.

The red led has to switch off. If it doesn't, turn the pot 1 the same direction up until it is in middle position. In case the led is still on, something is wrong with the connection, or the receiver and the transmitter cannot see each other correctly.

If everything had worked out well after 1/3turn of pot1, turn the pot to 1/2 position in order to have some reserve for temperature changes.

Change the position of the dip switches in that way, that you get a double flashing after repowering the system.

Now connect the transmitter S2 and the receiver E2. Turn the pot no 2 counterclockwise to its final position. The red led has to be off now, otherwise something is wrong with the connection or in the sight of receiver and transmitter.

Turn the pot now to its opposite final position in clockwise direction. The red led has to be on.

Repeat the process as with sensor pair no 1 by turning the pot 2 counterclockwise 1/3 of its full turn.

The red led has to go off. After this occurred everything is working perfectly and now turn the pot 2 into 1/2 of its full turn position to get some reserve.

In case the red led does not follow this line, please check your sensors and the wiring.

The procedure for connection a third pair is identical to procedure 2 and 1. Don't forget to change the dips into 3 flash position in advance.

Hint: After putting a passager of other hint inside the beam, it takes some seconds before the system switches. The periods to switch can differ, depending on the state of the program of the processor is in.

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