



# ***Product description***

## ***and***

# ***Technical specification***

**Type**  
**TRF 937/010**  
**Radio control**

**Abstract**

This document summarizes the technical characteristics of the RF RADIO CONTROL device providing information of both a specific and a general nature.



## INTRODUCTION

### ***Aim***

Provide a description of the product RADIO CONTROL TRF 937/010 for use with FIAT AUTO 139 along with technical information and instructions for a correct use of the product.

### ***Glossary***

#### **Indicate:**

- **RX** receiver placed inside the NBC board (radiofrequency 433.92 MHz)
- **F<sub>0</sub>** working frequency (433.92 MHz)
- **V<sub>B</sub>** battery voltage
- **T<sub>AMB</sub>** room temperature



## **GENERAL DESCRIPTION**

### ***Generality***

The component RADIO CONTROL TRF 937/010 in "key head" consists of the following parts:

N°1 base plate

N°2 plastic semi-shell (key body)

N°1 lithium battery CR 2032 (3V 180 mAh)

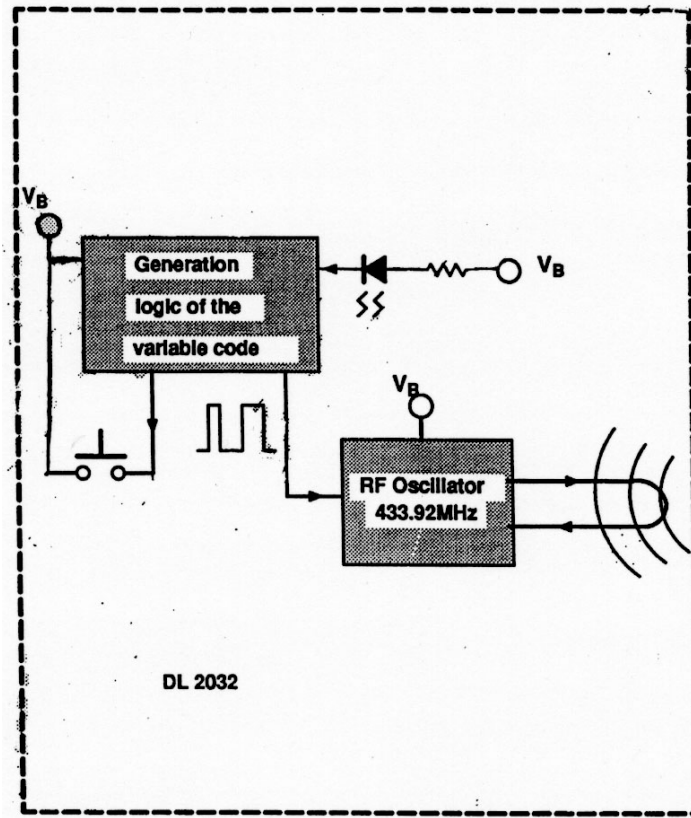
The information provided in this document relates to the RADIO CONTROL RF.

For the remaining subjects (Overhead receiver RF) refer to the specific product description.

The purpose of the device is to carry out the functions of TRANSMISSION of the encrypted variable code to the RF receiver placed in the NBC 139 and the SIGNALLING of the level of the batteries that supply it.

The transmission of the code allows (using the dedicated switches) insertion and disconnection of the alarm system, locking and unlocking of central door locking and opening of boot compartment.

### Block diagram



### List of functions

The purpose of the device is to carry out the following functions:

#### Transmission of a variable code to the receiver RRF 010

This is carried out through a transistor oscillator stabilised with a SAW Resonator ( $f_0 = 433.92$  MHz), the antenna's type is of a "spiral" screen, printed directly onto the circuit; the "encrypted" variable code is sent, modulating in amplitude the carrier generated by the oscillator (ASK-digital amplitude modulator-) through a dedicated integrated circuit.



### **Signalling of the level of the lithium battery**

A gauge with fixed threshold has been placed inside the dedicated integrated circuit and it enables us to distinguish OK batteries from wasted ones, through two different means of led piloting. By pressing the button it generates:

- OK batteries => flashing led for the entire duration of the pressure on the key
- Wasted battery => just 1 flash of the led on pressing the key

After a hundred transmissions with low level battery supply voltage, the system cuts off the function of the remote control.

It restarts itself only if a new full charge battery replaces the wasted one, otherwise the remote control doesn't restart itself (saved in EEPROM).

The logic stage exists of:

- dedicated, integrated circuit
- three normally opened pushbutton
- led

The function of this H/W stage is the generation of the variable code (by modulating the oscillator).

### **Keys' functions**

The remote control has three keys respectively called BLOCK, UNBLOCKING and BOOT.

The keys operate the following functions:

#### BLOCK

Pressing the BLOCK keys the doors will lock and insert the eventual alarm system.

Pressing more then 4 seconds the windows and the sliding roof will close automatically (SUPERLOCKING).

The movement will interrupt itself if the key's pressure stop. New pressure for 4 seconds will start the function again.

#### UNBLOCKING

Pressure of the unlocking key will unlock the doors, switch the inside lights and disconnect the eventual alarm system (SUPERUNLOCKING).

Pressing the key for more then 4 seconds the windows and the sliding-roof will open automatically.

#### BOOT

Pressing the key will unlock the boot/rear door, visible from the slight lifting of this one. It will partially disconnect also the eventual alarm system.

