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INTRODUCTION

Thank you for purchasing this radio control. Before using it you are advised to read this instruction manual carefully. Each paragraph will give you all the information you need on how to carry out the individual operations correctly.

SERIES KIT CONSISTING OF:

1 (one) Receiving unit

1 (one) TR12RFMC-NF series transmitter

CHARACTERISTICS

- System with conformity certificated in accordance with European Directive 99/5/EC.
- Wide range of power supply and operating temperature
- Optimal communications reliability with 39 bit digital technology.
- Working range in optimum conditions: 200 metres.
- Immune to radio-electrical disturbance and electromagnetic pollution.
- Receiver unit with IP67 protection.
- Simple rapid installation thanks to prearranged cabling.

INSTRUCTIONS FOR USE

CORRECT INSTALLATION

The receiving unit has an IP67 seal, and external installation is therefore possible. However, you are advised to install the unit in a sheltered position (bearing in mind that if you use the internal aerial the latter must not be shielded by any metal structures).

- Mount the aerial (where provided) on a metal base if possible, in a visible position well away from sources of electromagnetic disturbance (motorised circular flashers, etc.).
- Connect output cables.
- Bring the power supply to the unit directly from the BATTERY using:
 - a. a protection fuse of appropriate capacity (solenoid valve + auxiliary current);
 - b. cables of sufficient diameter for the load to be piloted.
- Connect the aerial cable terminal, where provided.

The output voltage of the selected function is the same as the unit power supply voltage.

RECEIVING UNIT



- **Receiver**

433.92 MHz SUPERHETERODYNE FM/FSK receiver realized in SMT technology, on multi-layer printed circuit in compliance with the I-ETS 300 220 Europeans standards.

- **Aerial**

The receiver is supplied with an internal charged aerial with an SMA connection. If higher system performance is required the charged aerial may be unscrewed and a vehicle aerial can be connected.

- **Fuse**

7.5A protective fuse (maximum) on output power supply line.

- **Led Indicators**

➤ Green led indicator:

- if on with continuous light it means that the device is powered up and operational. The power supply is independent: this red indicator is on also in case the power fuse is cutoff;
- if flashes to signal that the memory is empty: at least one transmitter code must be inserted.
- It is used when the codes have to be inserted or cancelled

➤ **F.1-F.16:** series of red leds that signal activation of outputs 1-16 (led on: output voltage)

- **ACQ button**

Special button for acquiring and cancelling transmitter codes in memory.

- **Shut down**

The unit has a radio-controlled shut down function (operated by the transmitter).

The shut down condition is signalled by the red led 'EME' that shows a continuous light. E-O output is also activated under these conditions.

If the system is shut down, no output will be present.

Normal functioning can be restored in several ways depending on user needs, e.g:

- reset from power on (receiver switching off and switching on);
- reset from transmitter (transmitter switching on);

TECHNICAL CHARACTERISTICS

433.920 MHz SUPERHETERODYNE FM/FSK receiver.

Reception sensitivity: -105 dBm with 25 KHz SWING

Pass band: 200 KHz.

Attenuation of out-of-band signals: 50 dB.

Power supply: 10 Vdc / 30 Vdc.

Power consumption: 30 mA when idle;

190 mA (24 Vdc) with function activated (without load).

Outputs: 7A – 24Vdc MOSFET

Number of outputs: 16 + 1 auxiliary + 1

Temperature working range: -20 °C ÷ + 70 °C.

CONNECTIONS

- **ALIM+:** 10 – 30Vdc power supply (connect to battery positive pole).
- **ALIM-:** connect to the supply ground (possibly towards the battery negative pole).
- **PIN1:** auxiliary output (activated during every operation; it can be configured by means of the palm).
- **PIN 2 to 16:** positive output under the fuse.

INSERTION OF TRANSMITTER CODES

Every transmitter has a different code. The generated code consists of a customer code and the personal code of the transmitter: it is necessary to arrange for the acquisition of the transmitter codes by the receiving unit, as only commands coming from “recognised” transmitters are carried out:

To acquire the code of a new transmitter:

ENGLISH

- remove the cover of the receiving unit;
- switch on the transmitter (press the ON key until a beep is heard);
- press the 'ACQ' key on the main board and, at the same time, press a function key on the transmitter; the green LED 'A' will start flashing, showing that recognition of the transmitter has taken place.

when the procedure is finished, you can put the cover back on the unit.

! ATTENTION! the system is provided with a customer's code: only the transmitters with the same code as the receiver can be inserted.

Note: the unit can acquire a maximum of 16 different transmitters. If a further code (no.17) is inserted, this will replace the first code that was acquired, and so on.

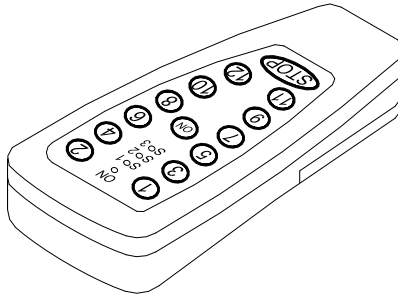
In case of need (for example following the loss of a transmitter) it is possible to cancel all the acquired codes. Proceed as follows:

- remove the cover of the receiving unit;
- press the red key for at least 10 seconds without using radio controls: the green LED 'A' will flash, showing that the memory has been cleared out.

The acquisition of at least one transmitter is necessary in order to make the receiving unit operational.

TRANSMITTER

TR12RFMC



CHARACTERISTICS OF THE TRANSMITTER

The TR12RFMC transmitter is the result of a multi-year experience gained in the sector of radio controls and is designed to remotely control RXFM12 receivers.

The salient characteristics of the transmitter are as follows:

- ✓ up to 48 functions;
- ✓ transmission type: FM;
- ✓ ample range;
- ✓ powered by standard 9V battery;
- ✓ extremely low power consumption;
- ✓ case made of shock-resistant ABS;
- ✓ highly reliable membrane keyboard;
- ✓ easily identifiable function keys and quick stop function;
- ✓ exclusive design.
- ✓ Back-lighted with EL light for use in low light conditions;
- ✓ fitted with battery charger adapter

INSTRUCTIONS FOR USE

Activation of the transmitter



Remove the cover of the battery compartment on the back of the transmitter (unscrewing the two fixing screws), insert a (new) 9V battery in the appropriate space and hook on the transmitter clip, making sure that it is properly in contact, then close the compartment and the relative cover. The transmitter is now operational: the led indicator ON comes on.

Use of the transmitter

If the transmitter is not yet in use, just press the ON key and hold it down until a prolonged beep signals that the transmitter is on.

With the transmitter operational (and the LED lamp flashing) a function can be activated using the appropriate key: the corresponding output of the unit will remain active until the key is released. The transmitter is designed to carry out only exclusive operations, and so it is not possible to activate more than one function at a time (the only exception is the shutdown function, which takes priority over all others).

There is a battery-saving function that provides for automatic switch-off if the transmitter remains unused for more than 3 minutes. After that inactivity period the transmitter switches itself off and signals the procedure by means of three brief acoustic signals. The purpose of this function is not only to reduce power consumption but also to avoid accidental use of the functions. To switch the transmitter on again press the ON key.

Batteries

When switched the transmitter monitors the battery charge signalling when the battery is discharged by emitting a series of acoustic signals in rapid sequence. It is however possible to continue working for a while, although it is advisable to replace the battery.

Shutdown status

When necessary all functions can be shut down using the special red STOP key. This has priority over all other keys, so the stop command can be given even when other functions are on.

When the stop function is activated the transmitter emits a series of stop commands, signals the function by means of brief acoustic signals, and switches itself off. To reset the transmitter carry out the procedure for turning it on.

Use of the rear lighting



The rear (back) lighting allows for quick, easy identification of the keys even in low-light conditions: to light up the keyboard with the transmitter operational press the ON key and hold it down until the rear lamp comes on (signalled by two beeps). If the transmitter is off, prolong the pressure on the ON key until the rear lamp comes on.

Use of the rear lighting involves higher power consumption and consequently shorter battery life: you are advised to use it only when necessary.

TECHNICAL CHARACTERISTICS



Working frequency: 433.920 MHz \pm 15 KHz at 22 °C.

Type of modulation: FM negative \geq 20KHz.

Transmitter power: EIRP \leq 10mW.

Power supply: MIN 7V - MAX 10V.

Average consumption @9V:

- Transmitter on: 1.2mA
- Transmitter in transmission: 15mA
- Transmitter in sleep status: 10uA.

Transmission code of the 39 bit digital type.

BATTERY CHARGER *(OPTIONAL)*



The battery charger (supplied as an optional) is capable of accepting an input voltage of 12 to 24 volts and is fitted with a plug for connection to the cigarette lighter of vehicles.

To recharge the battery:



The battery charger supplied with the transmitter is of the type without memory effect, so charging can be carried out at any time. First insert the small plug in the socket on the right side of the transmitter. Recharging can take place with the transmitter on or off (it makes no difference).

When charging begins the transmitter comes on, the keyboard lamp lights up, and a long acoustic signal is given. The ON LED lamp lights up, flashing frequently, and remains in this state throughout the charging period.

The transmitter is operational and remains so for 3 minutes; it can be used as usual: the LED lamp will however flash more frequently than usual to indicate that charging is under way. Recharging also continues with the transmitter off (the LED lamp continues flashing), until the battery is fully charged.

When replacing the rechargeable battery you are advised to use a battery of the NiMH type and to carry out a long charge (24H) before using the transmitter.

EXTERNAL VEHICLE AERIAL *(OPTIONAL)*



CHARACTERISTICS OF THE AERIAL

The range of the radio control can be greatly extended by using the vehicle aerial.

Its use is advisable if you have to operate at a substantial distance from the base position (the receiving unit).

The aerial is made of an extremely flexible and very strong innovative material whose gain is great than that of any other aerial as it has been designed and made for this specific application taking account of the system characteristics.

CORRECT INSTALLATION

Mount the aerial in the vertical position, if possible on a metal base and well away from sources of electromagnetic interference (motorised circular flashing lights, etc.), placing it in a visible position on the outside of the bodywork of the vehicle.

CE MARKING

This product meets the essential requirements laid down by the directive 99/5/EC.

Its conformity with the above-mentioned essential requirements is certified by application of the CE marking on the product.

Attention is drawn to the following actions that could compromise the above-testified conformity, apart from, of course, the product characteristics:

- incorrect electrical supply;
- incorrect installation or incorrect or improper use or use that does not comply with the warnings given in the user manual supplied with the product;
- replacement of original components or accessories with others of a type not approved by the maker, or carried out by unauthorised persons.

CERTIFICATE OF GUARANTEE

1. The device is guaranteed for a year from the date of purchase, the date being certified by a transport or delivery document that shows the model of the device and the buyer's name.
2. The guarantee covers replacement or repair free of charge of component parts of the device recognised as being defective because of manufacturing faults.
3. The guarantee does not cover any parts that are defective as a result of negligence or careless use, or incorrect installation or maintenance, work carried out by unauthorised persons, transport carried out without the necessary precautions, or from any other circumstances that cannot be attributed to manufacturing defects.
4. VA.RE.L declines any responsibility for any harm that may occur, directly or indirectly, to persons or things as a result of failure to observe all the indications given in the instructions for use as regards, especially, the warnings concerning installation, use and maintenance of the device.
5. The device will be repaired at the main office of the VA.RE.L company. The costs and risks of transport from and to the said office will be at the purchaser's expense.
6. Replacement of the device and extension of the guarantee following a repair operation is not possible.

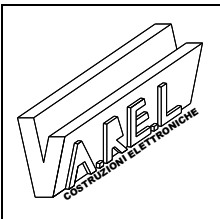
ELECTRIC AND ELECTRONIC EQUIPMENT



WARNING:

according to the Community Directive 2002/95/CE (italian decree-law of July 25th, 2005)
it is forbidden to discharge electric and electronic instruments as a common urban refuse.
It is necessary to address a special "RAEE discharge centre" for a differentiated discharge.

VA.RE.L reserves the right to modify the characteristics given in this manual without prior notice.



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