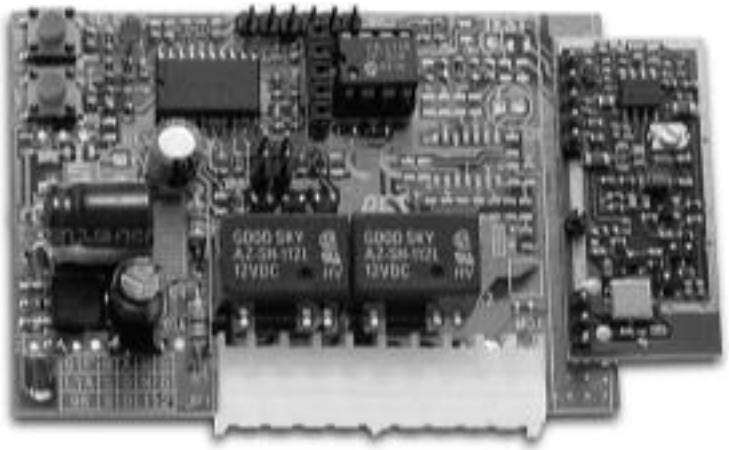
CLONIX
TRC 1-2-4
MITTO 2-4
433.92 MHz

D811324 29-03-02 Vers. 03



SELF-LEARNING ROLLING-CODE RECEIVER

Thank you for buying this product, our company is sure that you will be more than satisfied with the product's performance. The product is supplied with a "**Warnings**" leaflet and an "**Instruction booklet**". These should both be read carefully as they provide important information about safety, installation, operation and maintenance. This product complies with the recognised technical standards and safety regulations. We declare that this product is in conformity with the following European Directives: 89/336/EEC and 73/23/EEC (and subsequent amendments).

GENERAL SAFETY

WARNING! An incorrect installation or improper use of the product can cause damage to persons, animals or things.

- The "**Warnings**" leaflet and "**Instruction booklet**" supplied with this product should be read carefully as they provide important information about safety, installation, use and maintenance.
- Scrap packing materials (plastic, cardboard, polystyrene etc) according to the provisions set out by current standards. Keep nylon or polystyrene bags out of children's reach.
- Keep the instructions together with the technical brochure for future reference.
- This product was exclusively designed and manufactured for the use specified in the present documentation. Any other use not specified in this documentation could damage the product and be dangerous.
- The Company declines all responsibility for any consequences resulting from improper use of the product, or use which is different from that expected and specified in the present documentation.
- Do not install the product in explosive atmosphere.
- The construction components of this product must comply with the following European Directives:It complies with the 89/336/EEC, 1999/5/CEE, European Directive and subsequent amendments. As for all non-EEC countries, the above-mentioned standards as well as the current national standards should be respected in order to achieve a good safety level.
- The Company declines all responsibility for any consequences resulting from failure to observe Good Technical Practice when constructing closing structures (door, gates etc.), as well as from any deformation which might occur during use.
- The installation must comply with the provisions set out by the following European Directives:It complies with the 89/336/EEC, 1999/5/CEE, European Directive and subsequent amendments.
- Disconnect the electrical power supply before carrying out any work on the installation. Also disconnect any buffer batteries, if fitted.
- Fit an omnipolar or magnetothermal switch on the mains power supply, having a contact opening distance equal to or greater than 3mm.
- Check that a differential switch with a 0.03A threshold is fitted just before the power supply mains.
- Check that earthing is carried out correctly: connect all metal parts for closure (doors, gates etc.) and all system components provided with an earth terminal.
- Fit all the safety devices (photocells, electric edges etc.) which are needed to protect the area from any danger caused by squashing, conveying and shearing.
- Position at least one luminous signal indication device (blinker) where it can be easily seen, and fix a Warning sign to the structure.
- The Company declines all responsibility with respect to the automation safety and correct operation when other manufacturers' components are used.
- Only use original parts for any maintenance or repair operation.
- Do not modify the automation components, unless explicitly authorised by the company.
- Instruct the product user about the control systems provided and the manual opening operation in case of emergency.
- Do not allow persons or children to remain in the automation operation area.
- Keep radio control or other control devices out of children's reach, in order to avoid unintentional automation activation.
- The user must avoid any attempt to carry out work or repair on the automation system, and always request the assistance of qualified personnel.
- Anything which is not expressly provided for in the present instructions, is not allowed.

1) GENERAL OUTLINE

The Clonix receiver combines the characteristics of utmost safety in copying variable code (rolling code) coding with the convenience of carrying out transmitter "cloning" operations thanks to an exclusive system.

Cloning a transmitter means creating a transmitter which can be included automatically within the list of the transmitters memorised in the receiver, either as an addition or as a replacement of a particular transmitter.

Therefore it will be possible to remotely program a large number of additional transmitters, or for example, replacement transmitters for those which have been lost, without making changes directly to the receiver. Cloning by replacement is used to create a new transmitter which takes the place of the one previously memorised in the receiver; in this way the lost transmitter is removed from the memory and will no longer be usable

When coding safety is not a decisive factor, the Clonix receiver allows you to carry out fixed code additional cloning, which although abandoning the variable code, provides a high number of coding combinations.

Using clones when there is more than one receiver (as in the case of communal buildings),

and especially when a distinction is to be made between clones to be added to or replaced in individual or collective receivers, could turn out to be rather difficult. The Clonix receiver cloning system for communal buildings makes it particularly easy to solve the problem of clone storage for up to **250 individual receivers.**

2) TECHNICAL SPECIFICATIONS

Frequency	: 433.92MHz
Working temperature	: -20 / +55°C
Coded by means of	: Rolling-code algorithm
No. combinations	: 4 milliard
Dimensions	: see fig.1

2.1) Receiver

Power supply	: from 12 to 28V= - from 16 to 28V~
Antenna impedance	: 50Ohm (RG58)
Relay contact	: 1A - 33V~, 1A - 24V=

Max no. radio transmitters to be memorised:

Receiver version	No. radio transmitters
CLONIX 128	128
CLONIX 512	512
CLONIX 2048	2048

CLONIX 1 -single-channel, **CLONIX 2** - double-channel.

2.2) MITTO Transmitter

Keys	: Yellow
Power supply	: 2 3V Lithium batteries (CR2016 type)
Range	: 50 / 100 metres

Transmitter versions:
MITTO2 – double-channel, MITTO4 – four-channel.

2.3) TRC Transmitter

Keys:	: Red
Power supply:	: 12V Alkaline battery
Range:	: 50 / 100 metres

Transmitter versions:
TRC1-single-channel, TRC2- double-channel, TRC4- four-channel.

3) ANTENNA INSTALLATION

Use an antenna tuned to 433MHz.
For Antenna-Receiver connection, use RG8 coaxial cable.
The presence of metallic masses next to the antenna can interfere with radio reception. In case of insufficient transmitter range, move the antenna to a more suitable position.

4) PROGRAMMING

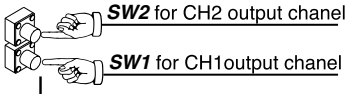
Transmitter storage can be carried out in manual mode, or by means

TABLE A

When pressing the key SW1 (for channel 1) or SW2 (for channel 2) for the first time, the receiver sets to the programming mode. Every time the key SW is pressed after that, the receiver switches to the configuration for the subsequent function, that is indicated by the number of flashings (see table).

For example, if SW2 is pressed for 4 consecutive times, the receiver stores the second channel as timer output (4 flashings/pause/4 flashings/pause/...).

At this stage, after selecting the channel (SW1 or SW2) and the desired function, the key T (T1-T2-T3 or T4) of the transmitter will be stored in the memory of the receiver as indicated in the table for programming.



Standard Programming

Programming and Impulse output	Constant blinking. The receiver enters the programming mode. If no memory storage takes place during the subsequent 15 seconds, the receiver comes out of the programming mode. The combined output relay remains picked up as long as the respective transmitter key is kept pressed.	Press the hidden key P1 (Fig.2/Fig.5) on the transmitter until the Led remains on, then press the key T (1-2-3 or 4) on the transmitter until flashing is resumed, wait for the Led to switch off (15secs.) or disconnect the power supply. Now the key T of the transmitter is stored.
Automatic memory storage only TRC2/MITTO2 with impulse output	2 blinks followed by a pause of about 1 second. The key T1 of the transmitter is automatically stored on the output CH1 while the key T2 on CH2. Do not store the TRC1 with this function (key T2 is not available).	Press the hidden key P1 (Fig.2) on the transmitter until the Led remains on, then press the key T1 on the transmitter (pressing of the other keys is ignored), until flashing is resumed, wait for the Led to switch off (15secs.) or disconnect the power supply. Now the keys T1 and T2 are automatically stored on CH1 and CH2.

Advanced Programming

Step-by-step output	3 blinks followed by a pause of about 1 second. The combined output relay changes its status each time the transmitter key is pressed.	Press the hidden key P1 (Fig.2/Fig.5) on the transmitter until the Led remains on, then press the key T (1-2-3 or 4) on the transmitter until flashing is resumed, wait for the Led to switch off (15secs.) or disconnect the power supply. Now the key T of the transmitter is stored with step-by-step mode.
Timer output	4 blinks followed by a pause of about1 second. Each time the transmitter key is pressed, the output relay remains picked up for 90 seconds. If the key is pressed during the counting cycle, counting is restarted for further 90 seconds.	Press the hidden key P1 (Fig.2/Fig.5) on the transmitter until the Led remains on, then press the key T (1-2-3 or 4) on the transmitter until flashing is resumed, wait for the Led to switch off (15secs.) or disconnect the power supply. Now the key T of the transmitter is stored with timer functioning mode.
Code elimination	5 blinks followed by a pause of about1 second. N.D.	
Cancellation of the entire receiver memory	6 blinks followed by a pause of about 1 second. WARNING! This operation deletes all of the radiocontrols stored on channel 1 and channel 2 from the memory of the receiver.	While the Led is flashing, simultaneously press the keys SW1 and SW2 on the receiver for more than 10secs. Now all of the transmitters have been cancelled and the programming mode is abandoned.

LEGEND

FUNCTION	NUMBER OF LED DL1 BLINKING SIGNALS FUNCTION DESCRIPTION	PROGRAMMING PROCEDURE

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of the **UNIRADIO** programmer which allows you to create installations in the "collective receivers" mode, as well as manage the complete installation database using the EEdbase software.

5) MANUAL PROGRAMMING

In the case of standard installations where no advanced functions are required, it is possible to proceed to manual storage of the transmitters, making reference to programming table A and to the example for basic programming in Fig.2.

1) If you wish the transmitter to activate output 1, press pushbutton SW1, otherwise if you wish the transmitter to activate output 2, press pushbutton SW2.
2) If you wish to obtain functions other than monostable activation, refer to **table A – output activation.**
3) When LED DL1 starts blinking, press hidden key P1 on the transmitter, LED DL1 will remain continuously lit.
   Note: Hidden key P1 appears differently depending on the transmitter model.
   For **TRC 1-2 / MITTO 2-4**, press hidden key P1 (Fig.3).
   For **TRC 4**, the key P1 function corresponds to simultaneously pressing the 4 transmitter keys or, after opening the battery compartment, bridging the two P1 points by means of a screwdriver (Fig.3).
4) Press the key to be memorised on the transmitter, LED DL1 will start blinking again.
5) To memorise another transmitter, repeat steps 3) and 4).
6) To exit the storage mode, wait until the LED is switched off completely.

IMPORTANT NOTE: ATTACH THE ADHESIVE KEY LABEL TO THE FIRST MEMORISED TRANSMITTER (MASTER).

In the case of manual programming, the first transmitter assigns the key code to the receiver; this code is necessary in order to carry out subsequent cloning of the radio transmitters.

6) RADIO TRANSMITTER CLONING

6.1) Cloning with rolling-code (JP5 connected)

Clones can be added by means of UNIRADIO, and the only limitation to this is the maximum number of transmitters the receiver can memorise.

Note: in rolling-code cloning, the level of safety of the code anti-copying system is very high, and is the same as that of the transmitters memorised manually in the receivers.

Knowledge of the cloning key code or the reading from the key transmitter allow the operator to create additional clones by remote control, without needing further information.

To create replacement clones, you need to have the complete receiver memory data; therefore, if you plan to carry out replacement cloning operations by remote control, you need to memorise the contents of the receiver memory by reading it using UNIRADIO and entering it in the EEdbase database.

When assigning a specific key on an additional clone transmitter to a specific output channel on a receiver, a predefined procedure is followed which can be decided at will if the radio transmitter storage is carried out by means of UNIRADIO, or otherwise is identical to the key transmitter procedure.

The keys on the replacement clone transmitter maintain the same association with the output channels of the receiver as the replaced transmitter.

Code reading:

In the case where a receiver code in not known, reading can be obtained by proceeding in the following way.

1) Switch **UNIRADIO** on and wait for the welcome message.
2) Use the **<arrow up>** and **<arrow down>** keys to select item **<go the menu number>.**
3) Press **<enter>.**
4) When in the subsequent menu, type number **225** and press **<enter>**.
5) Follow the instructions appearing on the **UNIRADIO** display.

Cloning by addition:

a) Cloning by addition with code

Having carried out key code reading, you are advised to write it down on the appropriate card supplied and given to the user (Fig.6).

For practical clone creation, refer to instructions on the UNIRADIO device or, for clone addition, observe the following simplified procedure:

1) Switch **UNIRADIO** on and wait for the welcome message.
2) Use the **<arrow up>** and **<arrow down>** keys to select item **<go the menu number>**.
3) Press **<enter>**.
5) When in the subsequent menu, type number **2121** and press **<enter>**.
6) Follow the instructions appearing on the **UNIRADIO** display.

b) Cloning by addition with master

For practical clone creation by means of the master transmitter (marked with the key label) refer to the instructions on the UNIRADIO device, or observe the following simplified procedure:

1) Switch **UNIRADIO** on and wait for the welcome message.
2) Use the **<arrow up>** and **<arrow down>** keys to select item **<go the menu number>**.
3) Press **<enter>**.
5) When in the subsequent menu, type number **2122** and press **<enter>**.
6) Follow the instructions appearing on the **UNIRADIO** display.

Cloning by replacement:

During the replacement cloning procedure, you are requested to specify the position taken up in the receiver memory by the transmitter to be eliminated. It is therefore indispensable to have the complete data of the said position; this operation can only be carried out through unloading the data by means of UNIRADIO and entering them in the EEdbase database.

1) Switch **UNIRADIO** on and wait for the welcome message.
2) Use the **<arrow up>** and **<arrow down>** keys to select item **<go the menu number>**.
3) Press **<enter>**.
5) When in the subsequent menu, type number **2314** and press **<enter>**.
6) Follow the instructions appearing on the **UNIRADIO** display.

6.2) Cloning with fixed code (JP5 open)

In the cases where you do not wish to manage the list or the cloning key or the key transmitter, additional clones can be generated by means of UNIRADIO, starting from any transmitter which is already memorised within the system. This operation can only be carried out if the receiver is configured to operate with a fixed code (no longer a rolling code) by removing bridge JP5 in Fig. 4.

NOTE: ALTHOUGH A HIGH NUMBER OF COMBINATIONS FOR TRANSMITTER CODING IS INCLUDED IN THE FIXED CODE CONFIGURATION, THE SAFETY LEVEL OF THE CODE ANTI-COPYING SYSTEM IS INFERIOR.

When assigning a specific key on an additional clone transmitter to a specific output channel on a receiver, a predefined procedure is followed which can be decided at will if the radio transmitter storage is carried out by means of **UNIRADIO**, or otherwise is identical to the key transmitter procedure.

For fixed code clone creation, refer to the **UNIRADIO** instructions or observe the following simplified procedure:

1) Switch **UNIRADIO** on and wait for the welcome message.
2) Use the **<arrow up>** and **<arrow down>** keys to select item **<go the menu number>**.
3) Press **<enter>**.
4) When in the subsequent menu, type number 21 and press **<enter>**.
5) Select menu **<fixed code cloning>** and press **<enter>**.
6) Follow the instructions appearing on the **UNIRADIO** display.

7) COLLECTIVE RECEIVERS

Collective installations can be carried out by means of the UNIRADIO programmer. For instance, just one transmitter can be used to control a "collective" receiver (ref. "C", Fig.5), and an "individual" receiver (ref. PX, Fig. 5).

In this type of installation, the appropriate codes need to be assigned

to the various receivers by means of UNIRADIO.
Each code is made up of 10 figures in hexadecimal format (thus figures from 0 to 9 as well as characters A-B-C-D-E-F are allowed), e.g.:

1A9C-22FD-00

The first eight characters represent the actual code, the last two figures represent the type of receiver, either collective or individual. If the last two figures are equal to 00, it means that the receiver is preset for collective operation, whereas if the last two figures are different from 00, it means that the receiver is preset for individual operation. Therefore, if you wish to carry out an installation similar to the one illustrated in Fig. 5, you will need to assign a collective code to receiver "C" (e.g. **1A9C-22FD-00**) and then assign the same code to the individual receivers, except for the two last figures which must be in progressively increasing sequence (**1A9C-22FD-01,1A9C-22FD-02, 1A9C-22FD-03** etc.).
All the transmitters programmed with a particular code will therefore be automatically enabled to activate both the collective receiver (being provided with the same initial code number) and their own individual receiver (being provided with the full code number).
If necessary, a transmitter can be set exclusively to activate the collective receiver by being assigned the entire collective receiver code (in our example 1A9C-22FD-00).

WARNING!: The installation code will have to be chosen with care, avoiding codes which are too simple and codes which have already been assigned during previous installations.
In "Communal buildings" installations, no additional cloning operations can be carried out by means of the "Master" transmitter, since the code is directly assigned by the installer.
The codes ending with letters FB, FC, FD, FE and FF are not valid.

At this point it will be possible to program all the radio transmitters required, using the **UNIRADIO** programmer, managed by the **EEdbase** software if necessary.

NOTE: The EEdbase software provides a more efficient installation database management and a simpler storage procedure in the case of complex installations.

Programming of receivers is carried out through UNIRADIO according to the following procedure:

a) Configuration of complete parameters for each receiver by means of UNIRADIO
b) Transfer of programming data to the receiver.

a) Parameter configuration

1) Switch **UNIRADIO** on and wait for the welcome message.
2) Use the **<arrow up>** and **<arrow down>** keys to select item **<go the menu number>**.
3) Press **<enter>**.
4) When in the subsequent menu, type number 243 and press **<enter>**.
5) Configure the receiver following the instructions displayed on the screen:
   list definition: indicate the type of receiver: Clonix 128, 512 or 2048 (2048 only with UNIRADIO-E).
   output configuration: choose the type of function required (monostable= impulsive, bistable= step by step, timed)
   description: indicate the name of the list, maximum 15 characters
   receiver code: enter the assigned receiver code, paying attention to the distinction between **"collective"** and **"individual"** receiver.
   clone default: assign the required output to the required transmitter key, taking care to avoid assigning a key to an individual receiver, which has already been assigned to a collective receiver, or vice versa.

b) Transfer of programming data

6) Exit the list parameter menu by pressing **<ESCAPE>** and return to the initial menu.
7) Use the **<arrow up>** and **<arrow down>** keys to select item **<go the menu number>**.
8) Press **<enter>**.
9) When in the subsequent menu, type number 223 and press **<enter>**.
10) Connect the receiver to be programmed as indicated in Fig.4.
11) Wait for the data to be transferred.

Repeat this procedure for each receiver to be memorised.
Refer to the **UNIRADIO** instructions for further details.

Then use the individual receiver codes to set up all the required radio transmitters, following the instructions given in paragraph 6 .1a **"Rolling-code cloning with code".**
You can carry out creation and cloning of other radio transmitters at any time by using the code number assigned, which is chosen at the installer's or user's discretion. You are therefore advised to write it down on the appropriate card supplied and to give it to user of the **"individual"** receiver (Fig.6).
To create replacement clones, you need to have the complete receiver memory data; therefore, if you plan to carry out replacement cloning operations by remote control, you need to memorise the contents of the receiver memory by reading it using **UNIRADIO** and entering it in the **EEdbase** database.

NOTE: For installations in the **"collective receivers"** mode, it is advisable to create a complete installation database, by means of **EEdbase**, containing the data for each receiver and transmitter, and to number progressively each memorised transmitter, in order to be able to carry out additional or replacement cloning operations, even years later, without needing to make changes directly to the receivers.
Refer to the **UNIRADIO** instructions and to the on-line **EEdbase** software guide.
WARNING!: The cloning procedures specified in paragraph 6 give a simplified explanation of how to carry out cloning, without having the clones created contained in a database.
Refer to the **UNIRADIO** instructions for further information concerning the creation and management of a database.

8) MAINTENANCE

The maintenance of the system should only be carried out by qualified personnel regularly. The MITTO transmitters are supplied by two 3V lithium battiers (type CR2016).The TRC transmitters are powered by a 12V alkaline battery.When replacing the batteries type CR2016 do not touch the poles with thehands.
Any reduction in the transmitter capacity may be due to the batteries getting flat. When the led of the transmitter flashes, it means that the batteries are
flat and must be replaced.

9) DISPOSAL

ATTENTION: disposal should only be carried out by qualified personnel.
Materials must be disposed of in conformity with the current regulations. In case of disposal, the system components do not entail any particular risks or danger. In case of recovered materials, these should be sorted out by type (electrical components, copper, aluminium, plastic etc.). For battery disposal, refer to the current regulations.

The descriptions and illustrations contained in the present manual are not binding. The Company reserves the right to make any alterations deemed appropriate for the technical, manufacturing and commercial improvement of the product, while leaving its essential features unchanged, at any time and without undertaking to update the present publication.

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Fig. 1

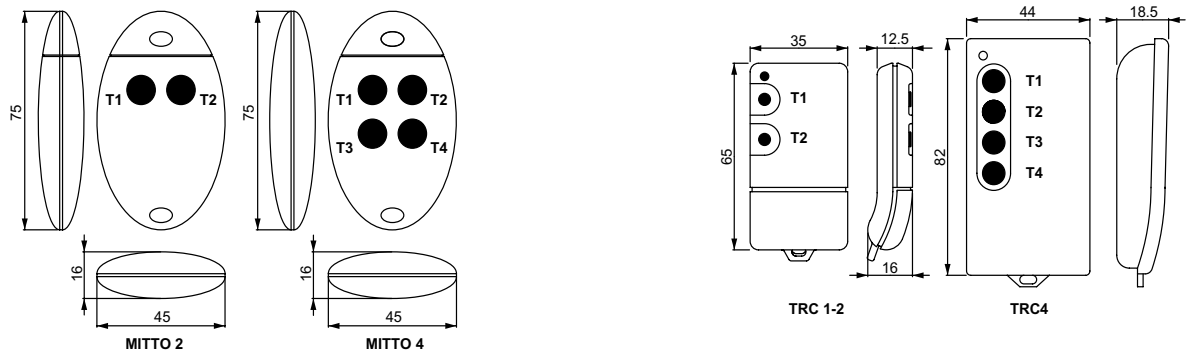


Fig. 2

I PROGRAMMAZIONE BASE CLONIX
Uscita impulsiva 1 e 2 (per comandare ad esempio lo start di una centrale di comando e l'apertura pedonale della stessa)

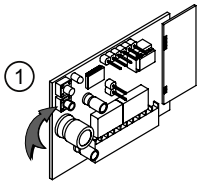
F PROGRAMMATION DE BASE CLONIX
Sortie impulsive 1 et 2 (pour commander par exemple le start d'une unité de commande et l'ouverture piétonne de l'unité)

E PROGRAMACIÓN BASE CLONIX
Salida impulsiva 1 y 2 (para activar, por ejemplo, el start de una central de mando y la apertura peatonal de la misma)

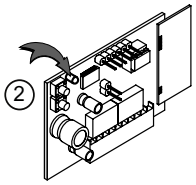
GB *BASIC PROGRAMMING OF CLONIX*
Impulsive output 1 and 2 (to activate, for example, a control unit and its pedestrian opening)

D *BASIS-PROGRAMMIERUNG CLONIX*
Impuls-Ausgang 1 und 2 (um zum Beispiel den Start einer Steuerzentrale und deren Fußgängeröffnung zu befehligen)

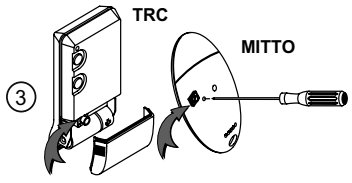
P *PROGRAMAÇÃO BASE CLONIX*
Saída impulsiva 1 e 2 (para comandar por exemplo o start de uma central de comando e a função abertura do postigo da mesma)



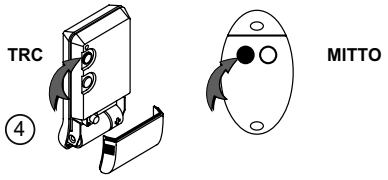
Premere una volta il tasto SW1.
Press the key SW1 once.
Appuyer une fois sur la touche SW1.
Einmal die Taste SW1 drücken.
Presione una vez la tecla SW1.
Pressionar uma vez a tecla SW1.



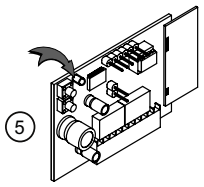
Il led comincia a lampeggiare.
The led begins to flash.
La led commence à clignoter.
Die Led beginnt zu blinken.
El led empieza a parpadear.
O led começa a piscar.



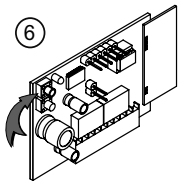
Premere il tasto P1 fino a che il led del ricevitore resta acceso.
Press the key P1 until the led of the receiver stays on.
Appuyer sur la touche P1 jusqu'à ce que la led du récepteur reste allumée.
Die Taste P1 drücken, bis die Led des Empfängers eingeschaltet bleibt.
Presione la tecla P1 hasta que el led del receptor se encienda.
Pressionar a tecla P1 até que o Led do receptor fica aceso.



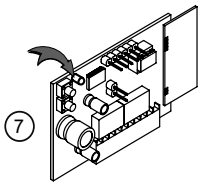
Premere il tasto T1 fino a che il led del ricevitore riprende a lampeggiare.
Press the key T1 until the led of the receiver begins to flash again.
Appuyer sur la touche T1 jusqu'à ce que la led du récepteur recommence à clignoter.
Die Taste T1 drücken, bis die Led des Empfängers wieder zu blinken beginnt.
Presione la tecla T1 hasta que el led del receptor vuelva a parpadear.
Pressionar a tecla T1 até que o led do receptor recomeça a piscar.



Attendere che il led si spenga.
Wait for the led to switch off.
Attendre que la led s'éteint.
Warten, bis die Led erlischt.
Espere a que el led se apague.
Aguardar que o led se apague.



Premere una volta il tasto SW2.
Press the SW2 once.
Appuyer une fois sur la touche SW2.
Die Taste SW2 einmal drücken.
Presione una vez la tecla SW2.
Pressionar uma vez a tecla SW2.



Il led comincia a lampeggiare.
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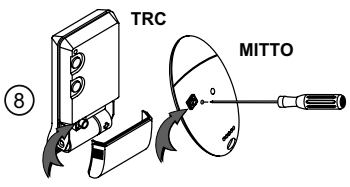
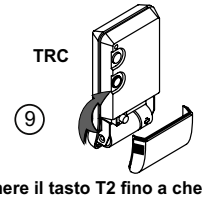
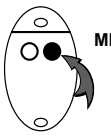
El led empieza a parpadear.
O led começa a piscar.

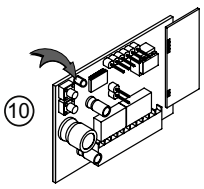


Premere il tasto P1 fino a che il led del ricevitore resta acceso.
Press the key P1 until the led of the receiver stays on.
Appuyer sur la touche P1 jusqu'à ce que la led du récepteur reste allumée.
Die Taste P1 drücken, bis die Led des Empfängers eingeschaltet bleibt.
Presione la tecla P1 hasta que el led del receptor se encienda.
Pressionar a tecla P1 até que o Led do receptor fica aceso.





Premere il tasto T2 fino a che il led del ricevitore riprende a lampeggiare.
Press the key T2 until the led of the receiver begins to flash again.
Appuyer sur la touche T2 jusqu'à ce que la led du récepteur recommence à clignoter.
Die Taste T2 drücken, bis die Led des Empfängers wieder zu blinken beginnt.
Presione la tecla T2 hasta que el led del receptor vuelva a parpadear.
Pressionar a tecla T2 até que o led do receptor recomeça a piscar.



Attendere che il led si spenga.
Wait for the led to switch off.
Attendre que la led s'éteint.
Warten, bis die Led erlischt.
Espere a que el led se apague.
Aguardar que o led se apague.

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Fig. 3

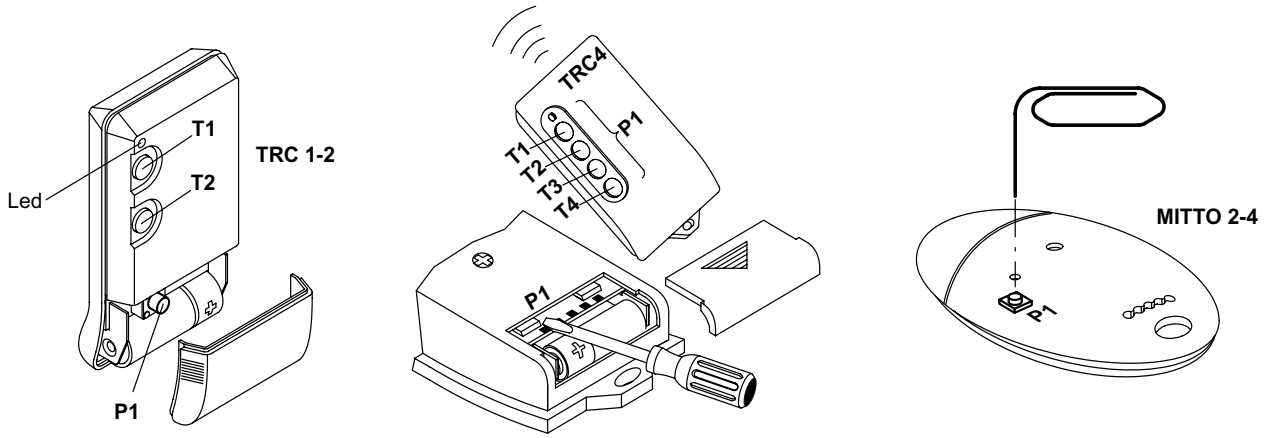
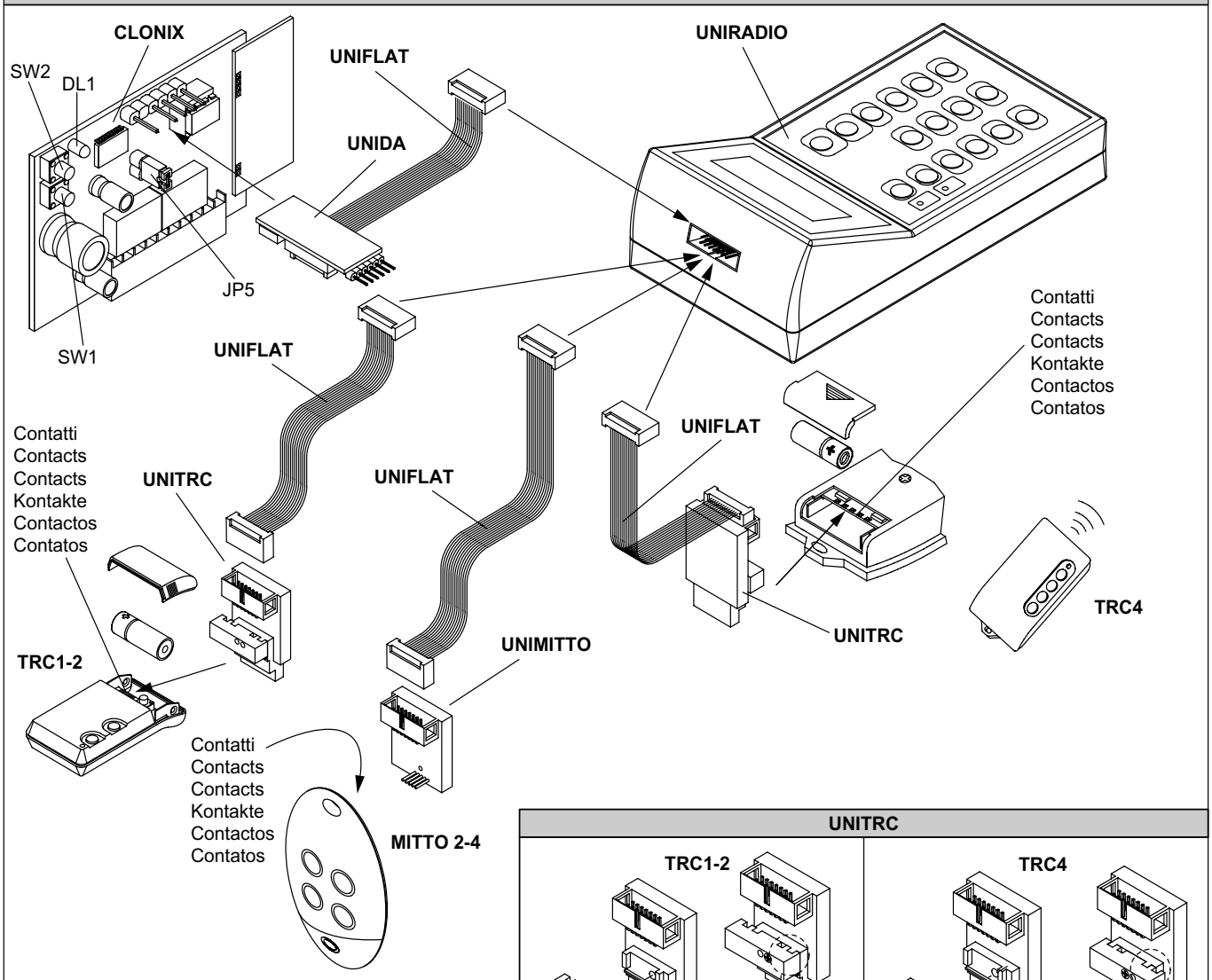
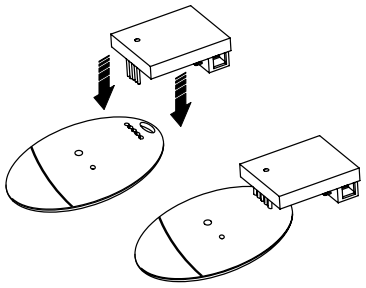


Fig. 4



UNIMITTO



UNITRC

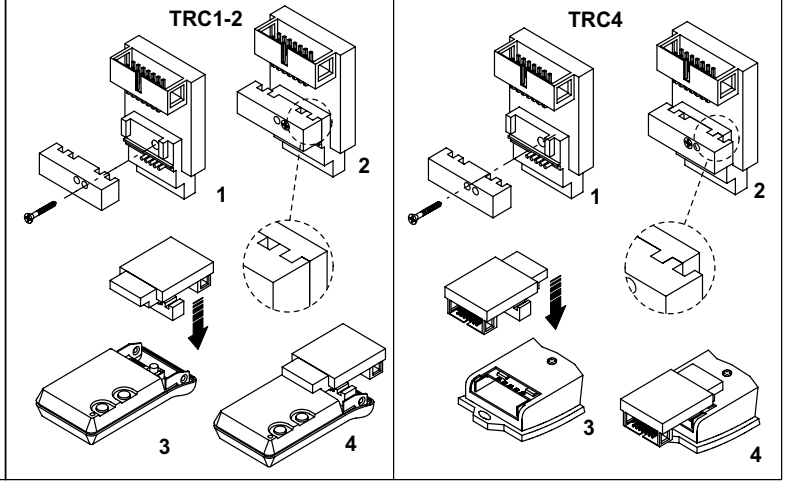


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Fig. 5

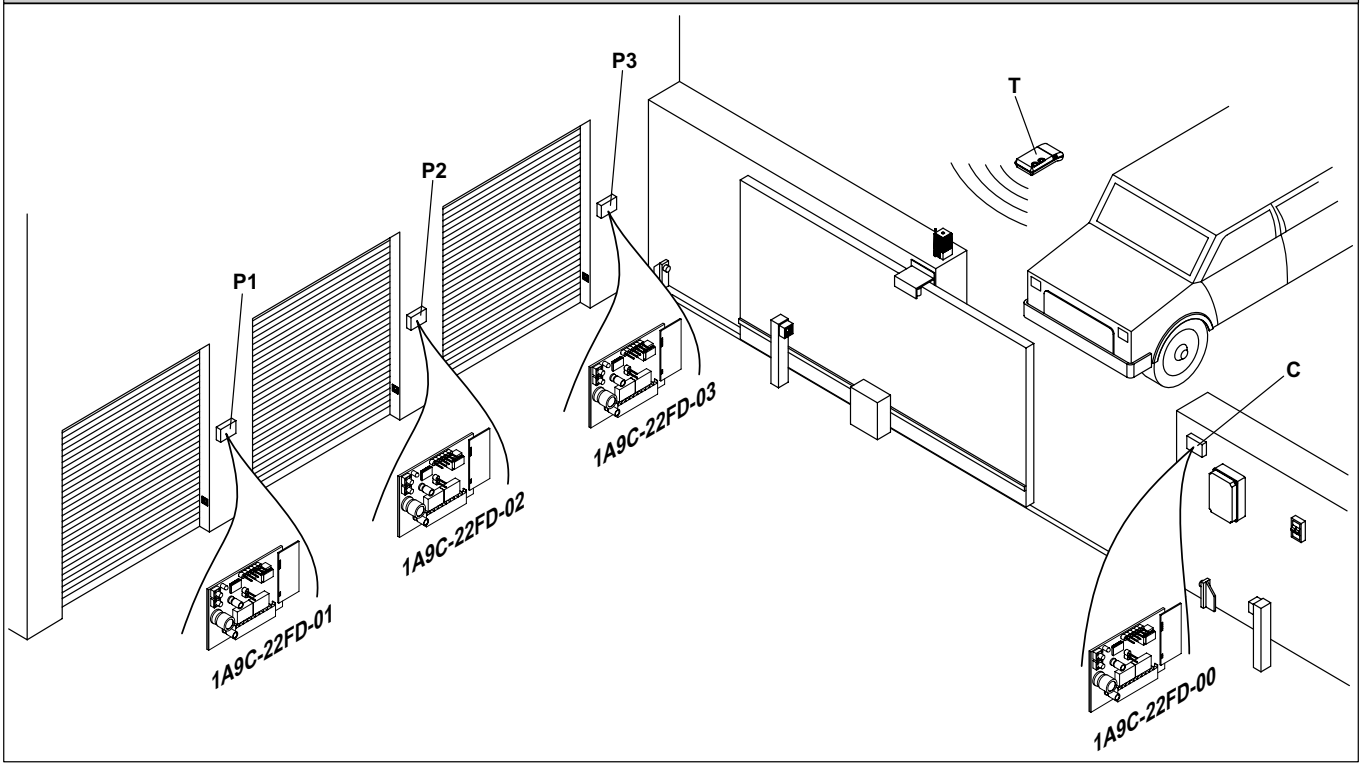


Fig. 6

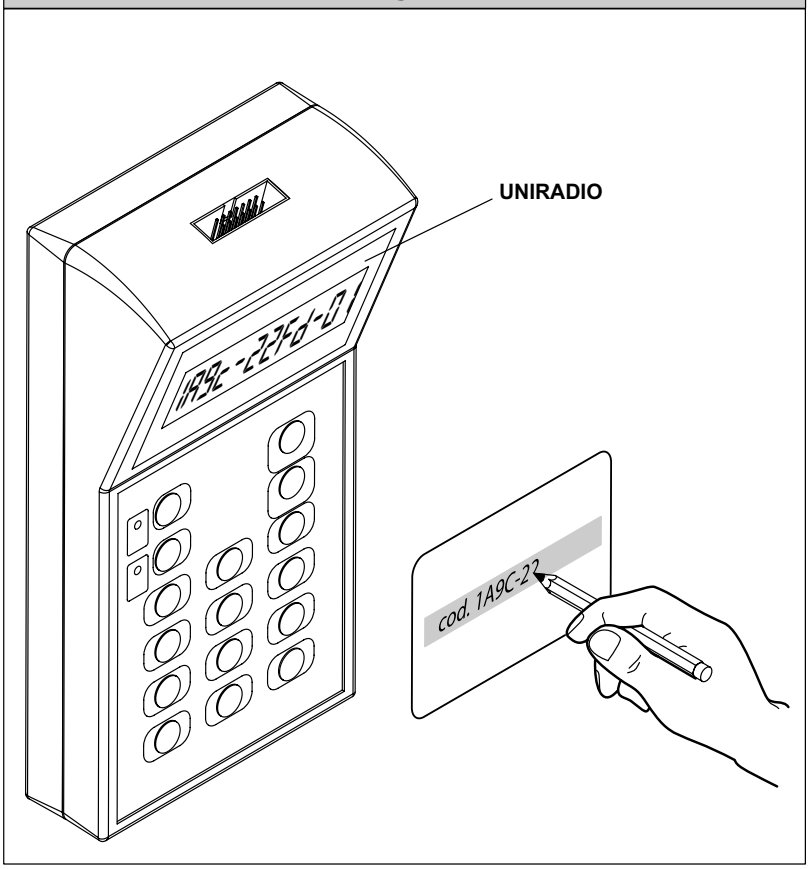
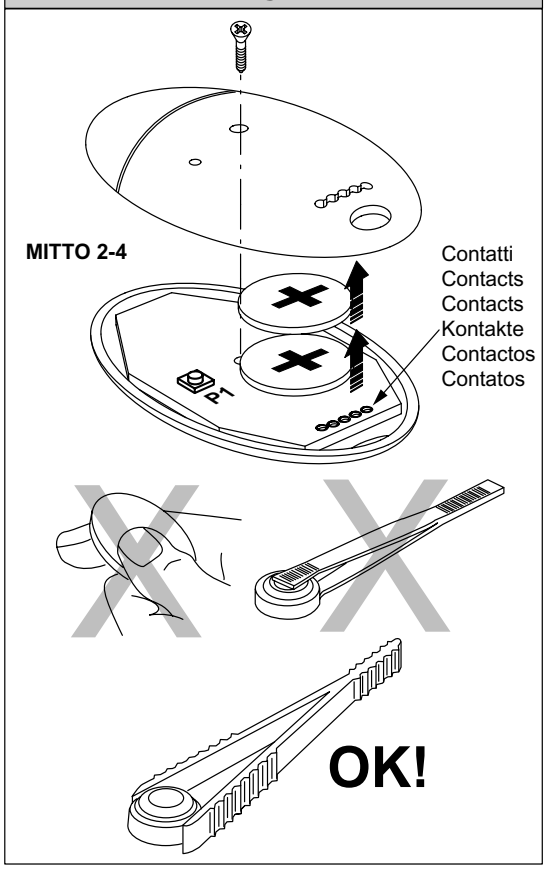


Fig. 7



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