

#### **4.0 OPERATING INSTRUCTIONS**

Instructions (code L312.00) for XRADO\_US digital radio control at 433.920 MHz are enclosed to present chapter.



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CODE Nr.	SERIES	MODEL	DATE
L312.00	XRADO	US	27-04-98
This product has been tried and tested in the manufacturer's laboratory, during the installation of the product follow the supplied indications carefully.			

## DIGITAL RADIO CONTROLS WITH DYNAMIC CODES XRADO (US)

### Description

The XRADO "US" Radio control system consists of one or more transmitters and one or more receivers which can be combined to meet the specific needs of the system.

The XRADO "US" system uses a highly reliable encoding system guaranteed by the use of dynamic codes. The code is changed for each encoding transmission through the use of an encoding algorithm which only the receiver is able to recognise and therefore decide whether or not the code transmitted corresponds to the original code. The generated code is memorised in the receiver via radio. The receiver is able to memorise up to 300 different codes. During the transfer stage the codes are memorised in a non volatile memory module. As this is a system based on dynamic codes each code is processed individually by the receiver.

### Important

The transmitted code changes for each command (rolling code). If disturbance interrupts the transmission, the receiver will wait for a different code, at this point the relay can only be activated by first releasing and then pressing the transmitter channel button a second time.

### Use

The XRADO "US" radio control allows the remote activation of electrical and electronic appliances with its best use in the following areas: automatic opening systems, alarm systems, and in all systems which require remote control activation (without wires) using secret codes, in compliance with the safety standards governing the installation of appliances.

### Transmitter versions

T-XRADO2US	Miniaturised transmitters	2 Buttons
T-XRADO4US	Miniaturised transmitters	4 Buttons

### Receiver versions

R-XRADO1.0US	Mini receiver	1 Channel
R-XRADO2.0US	Mini receiver	2 Channels
R-XRADO1.0US	Slot-in receiver card	1 Channel
R-XRADO2.0US	Slot-in receiver card	2 Channels

### Receiver antenna installation

NB. Minimum and maximum range of the radio controls. 'Range' is intended to mean the working distance, measured in free space, between the receiver and the transmitter with the antenna installed. The range is therefore closely linked to the technical characteristics of the system (power and sensibility) and varies according to the characteristics of the site in which the system is located.

It therefore follows that to obtain the best results from the radio control the installation sites for the receiver and the antenna should be carefully chosen. It is not possible to install 2 receivers at a distance of less than 1.5 mt. from each other.

It is good practise to position the receiver away from computer systems, alarm systems and other possible sources of disturbance.

(A bad choice of positioning could compromise the performance of the receiver).

### Antenna

The installation of the antenna is fundamental, connected to the receiver it represents the reception point for the radio control.

When installing the antenna the following points should be observed:

- Both the receivers (Slot-in and Mini) are supplied with their own antenna which consists of a piece of rigid wire 170 mm in length. As an alternative it is possible to connect a tuned antenna using a coaxial cable RG58 (impedance 50 Ω) with a maximum length of 15 m. The antenna should be positioned out of doors in the highest possible point, visible and away from metal structures.

### Transmitters

The transmitter is pre-coded and is fitted with an integrated circuit which is programmed in the factory with a unique identification number. All the code parameters are contained in this integrated circuit (external memory modules are not required) thus making code management more reliable and the system more secure.

The transmitter has an automatic shut down mechanism which cuts in after 25 seconds of continuous use (this limits battery consumption).

### Receivers

The receiver could be:

- a card inserted directly into an appliance which is designed to receive it (fig.6)
  - a mini receiver (in a case) fitted with a terminal board (fig.7).
- These receivers can either be fitted with one relay (single channel) or two relays (double channel) the outputs of which are marked CH1 (normally open contact) and CH2 (normally open/normally closed contact)

The relay functions A-B-C-D can be selected and made to correspond with the transmitter channels CHA-CHB-CHC-CHD by setting the jumpers situated on the circuit board (see fig.3).

### Status led "L1" on the receiver

- Flashing rapidly: cancelling a single user
- Flashing slowly: memorising a single user
- Continuously lit: memory full

### A- Memorising a channel (fig. 5)

1. Keep button "P1" MEMO pressed down and the led "L1" will start to flash slowly
2. Press the channel on the transmitter which is to be memorised
3. Keep button "P1" MEMO pressed down until led "L1" starts to flash again
4. Release the button and the LED continues to flash
5. Press the channel on the transmitter which is to be memorised again (same transmitter, same channel. If the channel or the transmitter is different you will not be able to memorise the channel.
6. End of the memory procedure. LED "L1" will remain lit for 2 seconds meaning that the channel has been correctly memorised.

### Note

- It is not possible to memorise a user code that is already in memory: In this case when the radiocontrol is activated (point 2) the led will stop flashing. The program will only work again when button "P1" MEMO has been released.
- If the radiocontrol is not activated a second time within fifteen seconds the program will automatically leave the memory mode without memorising a new user code.
- If a new user code is activated the first time and a different channel (with an already memorised user code) is activated the second time, the program will automatically leave the memory mode (because the two codes do not correspond) and the channel present in the second transmission will be activated.

### B- Cancelling a channel (fig. 5)

1. Keep button "P2" DELETE pressed down and the led "L1" will start to flash rapidly
2. Press the channel on the transmitter which is to be cancelled
3. Led "L1" will remain lit for 2 seconds meaning that the channel has been cancelled.

### Note

If the user which is to be cancelled is not found in the memory, the led will stop flashing. The program will only work again when button "P2" has been released. If the button is released before a channel is activated the program will automatically leave the memorising or cancelling mode.

### C- Cancelling the entire user memory (fig. 5)

1. Keep buttons (P1+P2) pressed down simultaneously for more than 4 seconds
2. Led "L1" will remain lit for the period of time required for the program to cancel all the codes (about 8 seconds)
3. Led "L1" will then turn off meaning that the cancellation procedure has been carried out.

### Note

It is only possible to switch from the memorising mode to the cancelling mode if you haven't already entered the second part of the memorising procedure (point 4 onwards). Once this part of the procedure has been reached you will have to complete the entire procedure. If you do not wish to memorise a code which you have already transmitted wait for fifteen seconds without doing anything, the led will switch off and the code will not be memorised. When the receiver's memory is almost full the user search function can take upto one second to complete.

## TECHNICAL SPECIFICATIONS

### RECEIVER

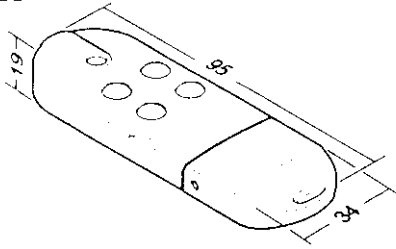
- reception frequency .....	433,92 Mhz
- local oscillation frequency .....	433,42 Mhz
- local oscillation emission .....	<-57dBm (<2hW)
- intermediate frequency IF .....	390 KHz
- antenna impedance in input .....	50 Ω
- sensitivity (finely tuned signal) .....	1.2 μV
- mini receiver power supply .....	12-24 Vac/dc
- slot-in card power supply .....	24 Vac/dc
- maximum power consumption at rest .....	8 mA
- maximum power consumption with activated relay .....	35 mA
- maximum commutable power at the relay with resistive load:	
load dc .....	28W
load ac .....	60VA
maximum voltage .....	48Vac/dc
- dropout delay .....	250 ms
- operating temperature range .....	-20°...+60°C
- maximum command response time .....	1 second
- minimum command response time .....	30 ms (circa)

### TRANSMITTERS

- carrier frequency .....	433.92 Mhz
- carrier frequency tolerance .....	±75 KHz
- band width .....	>25 KHz
- apparent radiated power .....	<-20 dBm
- apparent power harmonic products .....	<-40 dBm
- modulation .....	AM/ASK
- signal modulation .....	PCM, 1.2 ms/bit
- power supply .....	12V ± 10% (Alkaline battery GP23A)
- maximum power consumption .....	30 mA
- operating temperature range .....	-10...+55°C

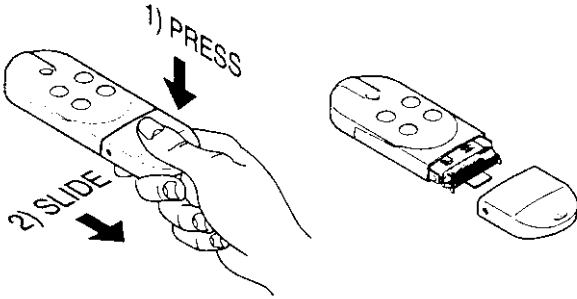
**DIMENSIONI D'INGOMBRO - OVERALL DIMENSIONS - DIMENSIONS D'ENCOMBREMENT - AUSSENABMESSUNGEN - DIMENSIONES DEL ESPACIO OCUPADO**

1



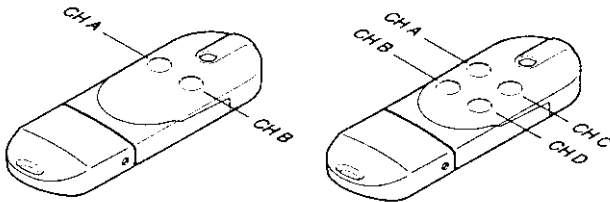
**CAMBIO BATTERIA - CHANGING THE BATTERY - REMPLACEMENT DE LA PILE - BATTERIEWECHSEL - SUSTITUCIÓN DE LA PILA**

2



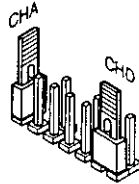
**SELEZIONE DEI CANALI - CHANNEL SELECTION - DISPOSITION DES CANAUX - ANORDNUNG DER KANÄLE - DISPOSICIÓN DE LOS CANALES**

3



Esempio di selezione canali  
Channel selection example  
Exemple de sélection de canal  
Beispiel der Kanalwahl  
Ejemplo de selección canal

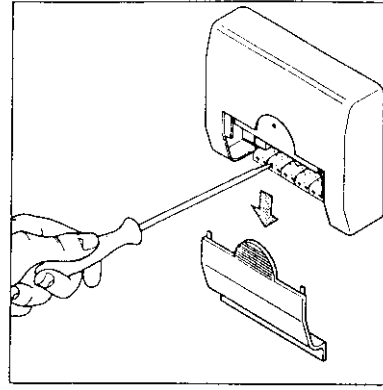
CH-1 = CHA (Tx)  
CH-2 = CHD (Tx)



A

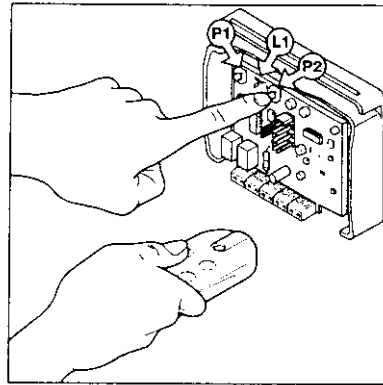
**COLLEGAMENTO ELETTRICO - ELECTRICAL CONNECTION - BRANCHEMENT ÉLECTRIQUE - KLEMMLEISTANSCHLÜSSE - CONEXIONES ELECTRICAS**

4



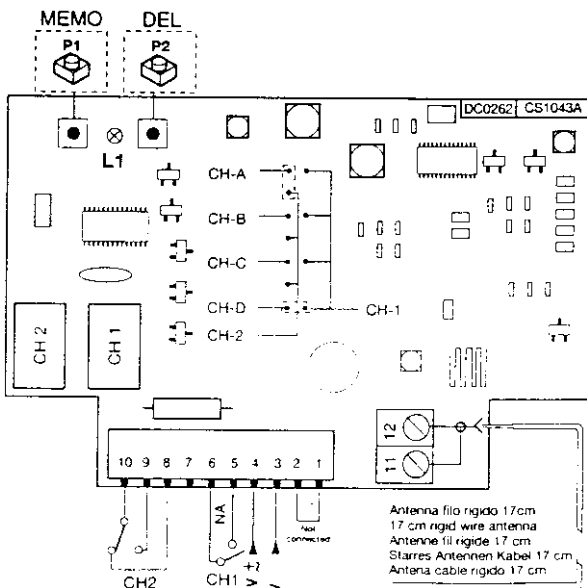
**PROCEDURA DI MEMORIZZAZIONE/CANCELLAZIONE CHANNEL MEMORISATION/CANCELATION PROCEDURE PROCÉDE DE MÉMORISATION/EFFACEMENT SPEICHER-/LÖSCHUNGSVERFAHREN PROCEDIMIENTO DE ALMACENAMIENTO/BORRADO**

5



**RICEVITORE A SCHEDA AD INNESTO DIRETTO SLOT-IN RECEIVER CARD RÉCEPTEUR À CARTE EMBROCHABLE EMPFÄNGERKARTE ZUR DIREKTEN EINSTECKUNG RECEPTOR CON TARJETA DE INSERCIÓN DIRECTA**

6



**RICEVITORE MINI MINI RECEIVER MINI RÉCEPTEUR MINIEMPFÄNGER MINI RECEPTOR**

7

