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DIGITAL RADIO CONTROLS WITH DYNAMIC CODES S435

Warning: Changes or alterations made to this device which have not been expressly approved by the party responsible for compliance with the local standards and regulations could cancel the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a class B digital device, according to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is advised to try to correct the situation by taking one or more of the following measures:

- Reorientate or relocate the receiving antenna
- Increase the distance between the equipment and the receiver
- Connect the equipment to a wall socket which is on a different ring circuit to that of the receiver
- Consult your dealer or an experienced radio/TV technician for help.

Description

The **S435** 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 **S435** 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 code is generated for each channel in the transmitter using the random arbitrary method with 2^{36} combinations. The generated code is memorised in the receiver via radio. The receiver is able to memorise 128 different codes. During the transfer stage the codes are memorised in a non volatile memory module which can be moved to another receiver without having to reprogram it. As this is a system based on dynamic codes each code is processed individually by the receiver.

Important

This is a device which uses a high security encoding system it follows therefore that if you lose one or more transmitters you will have to reprogram the system codes. The transmitted code changes for each command (rolling code). Disturbance during the transmission will deactivate the relay, at this point the relay can only be activated by first releasing and then pressing the transmitter channel button a second time.

Use

The **S435** 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.

Transmitter versions

TRS435200.0US	Miniaturised transmitters	2 buttons
TRS435400.0US	Miniaturised transmitters	4 buttons
TRS435120.0US	Miniaturised transmitters with switch (12 channels)	4 buttons
TRS43540M.0US	Wall mounted transmitter	4 buttons

Receiver versions

RCS435128	Modular receiver + container	4 channels
RSS435100	Slot-in receiver card	1 channel
RSS435200	Slot-in receiver card	2 channels
RMS435100.0US	Mini receiver	1 channel
RMS435200.0US	Mini receiver	2 channels

Memory module

This is extractable, furnished with a non volatile EEPROM type memory and contains the system code. The programmed code is maintained in this module even in the absence of power. This component can be ordered as an accessory with s.p.n. code:

- YMCC66128 up to 128 codes.

Receiver antenna installation

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.

You are not advised to install 2 receivers at a distance of less than 1.5 m from each other and it is also 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 correct 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:

- The receiver is supplied with its own antenna which consists of a piece of rigid wire 170 mm in length. In alternative it is possible to connect an ANS400 tuned antenna using a coaxial cable RG58 (impedance 50Ω) with a maximum length of 15 m.

Outdoor receivers (fig.9)

The receiver could be:

- in a case fitted with a 14-way terminal board (printed circuit CS926) with the following electrical connections:

12V ac/dc between binding posts 11-12

24V ac/dc between binding posts 10-12

The case type receiver is fitted using "fast-fitting" brackets. The bracket should be fixed to the wall using two raw plugs (check that it is in square).

After connecting the wiring the case should be slid onto the bracket therefore fixing it to the wall. If any repair work is necessary the case can be easily extracted by pushing upwards the action of which will separate it from the bracket.

Interchangeable channel modules

In the receivers the channel functions are printed on the circuit board. The interchangeable channel modules can only have the following configurations and must not be mixed:

- from 1 to 4 impulsive relay strips **MCC0381R0** 1 -2 Channels
- one memory relay strip **MCC0381M0** (On/Off) ON-OFF
- one timer relay strip **MCC0381T0** 0,5 to 120 Sec.

CODICE	SERIE	MODELLO	DATA
L378.00	S435	AM	20-10-2000
This product has been tried and tested in the manufacturer's laboratory, during the installation of the product follow the supplied indications carefully.			

Slot-in receiver cards (fig.10)

- The receiver card (printed circuit CS939) is inserted directly into an appliance which is designed to receive and has the following electrical connections:

12V ac/dc with jumper "12V" in position "B"

24V ac/dc with jumper "24V" in position "A"

The receiver cards 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 relays CH1 and CH2 can be activated by selecting the functions A-B-C-D and made to correspond with the transmitter channels CHA-CHB-CHC-CHD by setting the jumpers situated on the circuit board.

Mini receivers (fig.11)

- The mini receiver (printed circuit CS938) is housed in an indoor container, it is fitted with an 10-way terminal board and has the following electrical connections:

12V ac/dc between binding posts 7-8.

24V ac/dc between binding posts 6-8.

The mini receiver 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 relays CH1 and CH2 can be activated by selecting the functions A-B-C-D and made to correspond with the transmitter channels CHA-CHB-CHC-CHD by setting the jumpers situated on the circuit board.

Generating the user code in the transmitters (fig. 1-6)

- 1) Open the access door (fig.1)
- 2) For the version equipped with a channel block selection switch choose the desired block of channels by moving the switch ("Y1" fig.1,2)
Y1 in position "1" = A,B,C,D
Y1 in position "2" = E,F,G,H
Y1 in position "3" = I,L,M,N
- 3) Press the button "J1" (fig.3)
- 4) While keeping button "J1" pressed down press the button "CH" corresponding to the required channel which is to be memorised (Led "L1" will start to flash) (fig.4).
- 5) Release the channel button "CH" and the led will flash rapidly and the channel will be memorised. Only one code can be inserted at a time. To insert successive codes repeat steps 1 and 2.
- 6) Release the button "J1", the led will turn off and the transmitter will memorise the last code which was transmitted (fig.6).
- 7) Repeat points 3-4-5-6 for any successive channels
- 8) To memorise another block of channels move the switch ("Y1" fig.2) to the required position and repeat the operations 3-4-5-6.
If a code is not generated it could be due to the fact that the memory is empty and it is therefore impossible to transfer the code to the receiver.

Memorising the user code in the receiver (fig. 9-10-11)

- **Attention!** Before memorising the transmitters for the first time remember to cancel the entire memory content.

- 1) Keep button "P1" pressed down and the led "L1" will start to flash
- 2) Transmit the channel which is to be memorised, the led will flash rapidly and the channel will be memorised. Only one code can be inserted at a time. To insert successive codes repeat steps 1 and 2.

If the code is not memorised:

- The memory is full (128 codes already memorised) and the led remains lit. If this is the case you can only insert a new code after you have first cancelled an existing one or after wiping the entire memory (see memory cancelling procedure);
- The code may already exist in memory;
- You have not generated a channel code in the transmitter.

Memory cancelling procedure

To cancel a code proceed as follows:

- 1) Keep the button "P2" pressed down and the led "L1" will flash slowly.
- 2) Transmit the channel which is to be cancelled for at least 3 seconds until the led starts to flash quickly then repeat points 1 and 2 for any successive channels.
To wipe all the code from memory:
- 3) Keep buttons "P1" and "P2" pressed down simultaneously for at least 5 seconds until "L1" flashes quickly.

Channel functions for the S435 radio controls

Channel "A" of the transmitter must always correspond to channel "A" of the receiver and so forth for all four of the available channels.

Attention! The receiver can only respond to one signal at a time, it therefore follows that several channels cannot be activated simultaneously.

Selecting channel groups ("J1", fig.9-10-11)

The receiver can decode up to 12 different channels in blocks of 3 (A,B,C,D - E,F,G,H - I,L,M,N) by inserting the jumper "J1" in the right position.

J1 not inserted = A,B,C,D

J1 in position "1" = E,F,G,H

J1 in position "2" = I,L,M,N

TECHNICAL SPECIFICATIONS

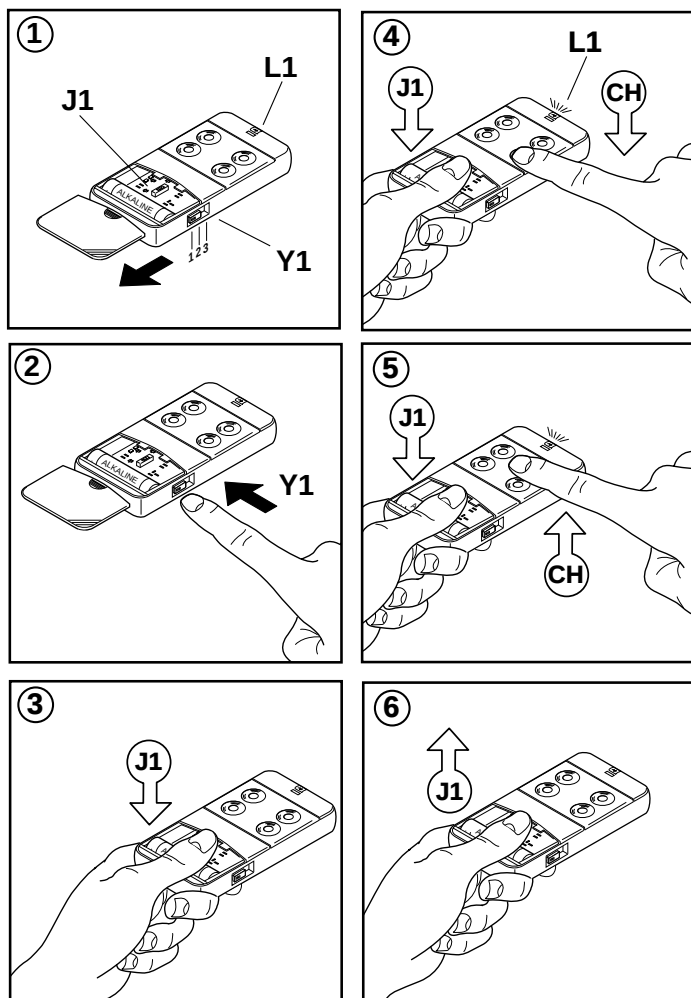
RECEIVER

- reception frequency 433.92 MHz
- local oscillation emission <57dBm (<2nW)
- antenna impedance in input 50Ω
- sensitivity (finely tuned signal) 1 μV
- power supply 12-24 V ac/dc
- maximum power consumption at rest/activated 20/50 mA
- maximum commutable power at the relay with resistive load:
 - load ac/dc 60VA/28W
 - maximum voltage 42.4Vac/dc
- excitation delay/dropout delay 150 ms
- operating temperature range -20° ... +60°C

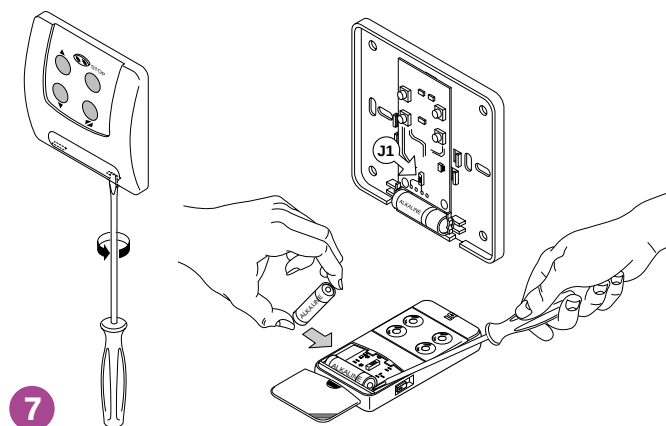
TRASMITTERS

- carrier frequency 433.92 MHz
- carrier frequency tolerance ±75 kHz
- band width >25 kHz
- modulation AM/ASK
- power supply (Alkaline battery GP23A) 12V ± 10%
- maximum power consumption 25 mA
- operating temperature range - 10...+55°C

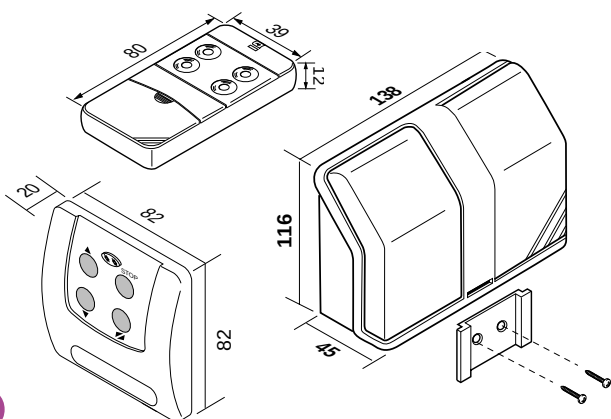
GENERATING THE TRANSMITTER CODE



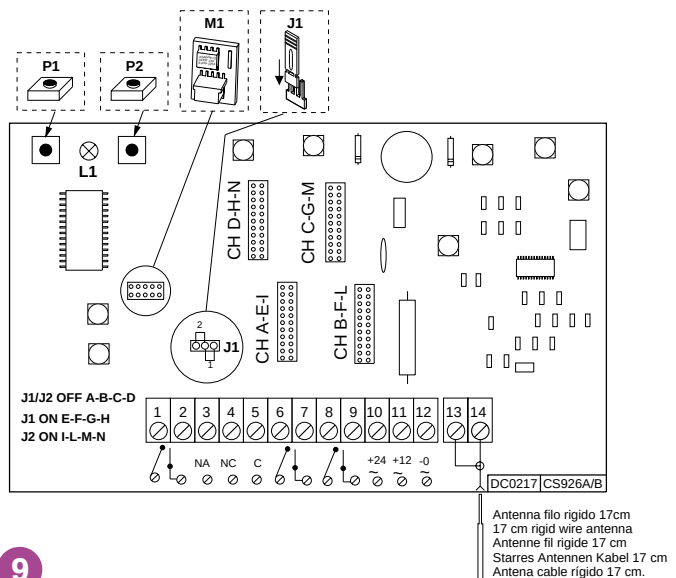
Changing the battery



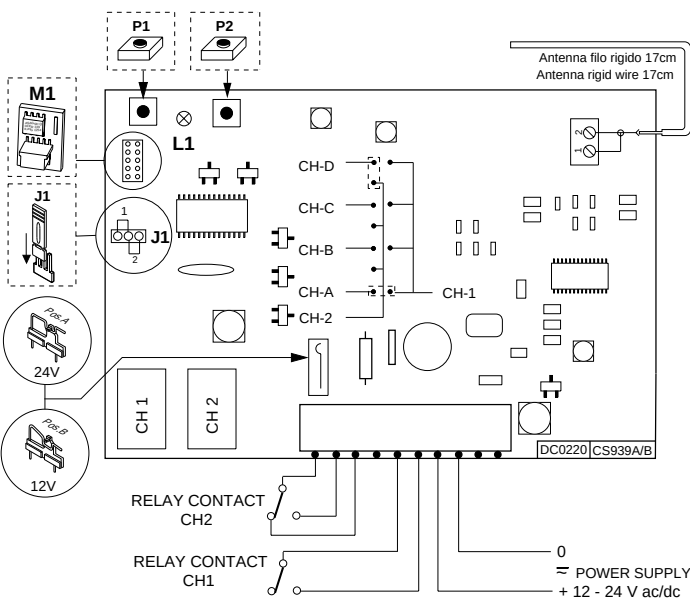
External dimensions



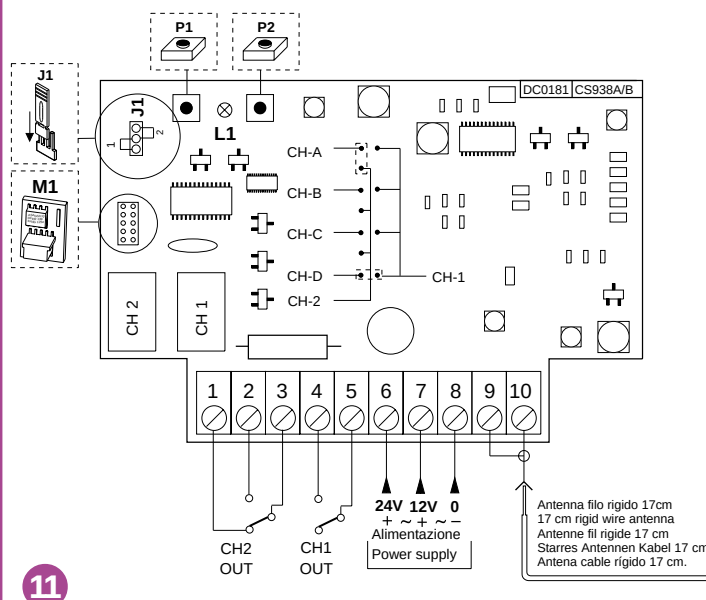
Modular receivers



Slot-in receiver cards



Mini receivers 1 -2 channels





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DIGITAL RADIOPROGRAMMER WITH DYNAMIC CODES S435

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However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is advised to try to correct the situation by taking one or more of the following measures:

- Reorientate or relocate the receiving antenna
- Increase the distance between the equipment and the receiver
- Connect the equipment to a wall socket which is on a different ring circuit to that of the receiver
- Consult your dealer or an experienced radio/TV technician for help.

Description

The **S435** radioprogramming 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 **S435** 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 code is generated for each channel in the transmitter using the random arbitrary method with **236** combinations. The generated code is memorised in the receiver via radio. The receiver is able to memorise up to **24** different codes. During the transfer stage the codes are memorised in a non volatile memory module which can be moved to another receiver without having to reprogram it. As this is a system based on dynamic codes each code is processed individually by the receiver.

Important

Disturbance during the transmission will disactivate the relay, at this point the relay can only be activated by first releasing and then pressing the transmitter channel button a second time.

Use

The radioprogrammer is best used in systems controlling automatic rolling shutters and allows the remote activation of a single phase **115Vac 350W** motor using dynamic commands Open-Stop-Close-Stop or the same commands by cable. During the code memorisation phase the channel can be associated (using the Dipswitch **SW1**) with one of the following functions: stop command only; open command only or sequential dynamic commands "Open-Stop-Close-Stop". This allows you to either control one motor or more than one motor contemporaneously using one channel for the complete opening command, one channel for the complete closing command and one channel for the single movement command.

Transmitter versions

TRS435200.0US	Miniaturised transmitters	2 Buttons
TRS435400.0US	Miniaturised transmitters	4 Buttons
TRS435120.0US	Miniaturised transmitters with switch (12 channels)	4 Buttons
TRS43540M.0US	Wall mounted transmitters	4 buttons

Receiver version

RPS435000.0US Radioprogrammer

Memory module

This is extractable, furnished with a non volatile EEPROM type memory and contains the system codes. The programmed code is maintained in this module even in the absence of power. This component can be ordered as an accessory with s.p.n. code: **MCC46320**

Receiver antenna installation

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. To obtain the best results from the device 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 m.** 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 correct 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 consider the following points: The receiver is supplied with its own antenna which consists of a piece of rigid wire **170 mm** in length. In alternative it is possible to connect an **ANS400** tuned antenna using a coaxial cable **RG58** (impedance 50Ω) 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.

Receiver

The receiver is installed using "fast-fitting" brackets. The bracket should be fixed to the wall using two raw plugs (check that it is square to the wall), the case can be then slid onto the bracket therefore fixing it to the wall. The slot-in circuit located towards the bottom of the case can be easily extracted to facilitate wiring up the device. If any repair work is necessary the case can be easily extracted by pushing upwards the action of which will separate it from the bracket.

Electrical connection (fig.9)

Before connecting the device to the mains make sure that:

- the voltage and frequency rated on the data plate conform to those of the mains supply;
- an omnipolar circuit breaker which leaves at least **3mm** between the contacts has been installed between the device and the mains;
- the high voltage **115V** wires pass through the holes marked **"A"** and are routed separately from the low voltage **24V** wires which pass through the holes marked **"B"**;
- the wires are fastened down using a cable clamp;
- once the wiring is complete the holes through which the wires have passed have been sealed using silicon;
- the holes which are not used are blocked by inserting the caps **"D"**;
- the appliance must be earthed, to this end use the binding post marked with the symbol ⊕ which can be found on the wiring box.

Terminal board connections (fig. 9)

- 1-2 Earth connection
- 3-4 Radioprogrammer power supply **115Vac 50-60Hz**.
- 5-6-7 Motor control in output "Open-Close-Common" **350W**.
- 8-9 N.C. input for safety devices with travel direction inversion during the closing cycle. If you connect a pair of photocells an external power circuit will be required.

CODE Nr.	SERIES	MODEL	DATE
ZVL379.00	S435	RXPR	20-10-2000
This product has been tried and tested in the manufacturer's laboratory, during the installation of the product follow the supplied indications carefully.			

10-11 Dynamic button in input (contact N.O.) with Open-Stop-Close-Stop functions

12 Antenna ground.

13 Antenna connection **17cm** rigid wire (as an alternative it is possible to connect an **ANS400** antenna using a coaxial cable RG58 (imp. 50Ω) with a maximum length of 15m).

Settings (fig. 9)

TL Work cycle regulation trimmer (15...80 secs).

The timer countdown starts after an opening or closing command has been received and is set to zero after the preset work cycle time has expired. It cannot be set while the motor is in movement.

PW Power on LED

F1 Fuse **4A** delayed

Generating the user code in the transmitters (fig. 1-6)

- Once the container has been opened (see fig.7) the programming procedure for the wall mounted transmitter is the same as for the hand held transmitter (the circuit is the same).

1) Open the access door (fig.1)

2) For the version equipped with a channel block selection switch choose the desired block of channels by moving the switch ("Y1" fig.1,2)

Y1 in position **"1"** = **A,B,C,D**

Y1 in position **"2"** = **E,F,G,H**

Y1 in position **"3"** = **I,L,M,N**

3) Press the button **"J1"** (fig.3)

4) While keeping button **"J1"** pressed down press the button **"CH"** corresponding to the required channel which is to be memorised. Led **"L1"** will start to flash (fig.4).

5) Release the channel button **"CH"** and the led will carry on flashing (fig.5).

6) Release the button **"J1"**, the led will turn off and the transmitter will memorise the last code which was transmitted (fig.6).

7) Repeat points 3-4-5-6 for any successive channels

8) To memorise another block of channels move the switch ("Y1" fig.2) to the required position and repeat the operations 3-4-5-6.

If a code is not generated it could be due to the fact that the memory is empty and it is therefore impossible to transfer the code to the receiver.

Generating the user code in the receiver (fig.9)

Attention! Before memorising the transmitters for the first time remember to cancel the entire memory content.

Dipswitch SW1 functions



DIP1-DIP2 OFF
Code memorisation is not possible



DIP1 ON/ DIP2 OFF
The memorised code is associated with the opening command



DIP1 OFF/ DIP2 ON
The memorised code is associated with the closing command



DIP1 ON/ DIP2 ON
The memorised code is associated with the dynamic function
Open-Stop-Close-Stop

Memorising the user code in the receiver

1) Using dipswitch **"SW1"** select the function to be associated with the channel

2) Keep button **"P1"** pressed down and the led **"LD"** will start to flash

3) Transmit the channel which is to be memorised, the led will flash rapidly and the channel will be memorised. Only one code can be inserted at a time. To insert successive codes repeat steps 2 and 3.

- When you have finished memorising the codes remember to replace dips 1-2 in the off position on **"SW1"**.

If the code is not memorised it could be due to the following:

- The memory is full (24 codes already memorised) and the led remains lit. If this is the case you can only insert a new code after you have first cancelled an existing one or after wiping the entire memory (see memory cancelling procedure);
- The code may already exist in memory;
- You have not generated a channel code in the transmitter.

Memory cancelling procedure:

1) Keep the button **"P2"** pressed down and the led **"LD"** will flash slowly.

2) Transmit the channel which is to be cancelled for at least 3 seconds until the led starts to flash quickly then repeat points 1 and 2 for any successive channels.

To wipe all the codes from memory:

3) Keep buttons **"P1"** and **"P2"** pressed down simultaneously for at least 5 seconds until the led **"LD"** flashes rapidly.

Receivers

The receiver can decode up to 12 different channels in blocks of 3 (A,B,C,D - E,F,G,H - I,L,M,N.) without a selection.

TECHNICAL SPECIFICATIONS

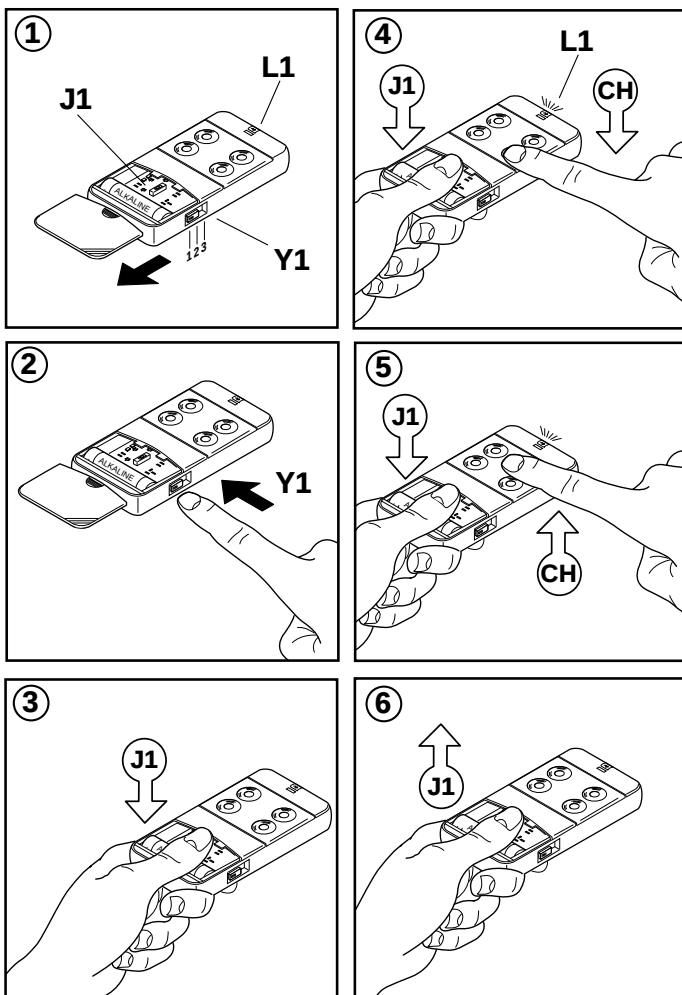
RECEIVER

- reception frequency 433,92 MHz
- local oscillation emission < -57dBm (<2nW)
- antenna impedance in input 50Ω
- sensitivity (finely tuned signal) 1 μV
- power supply 115Vac 50-60 Hz
- operating temperature range -20°...+60°C

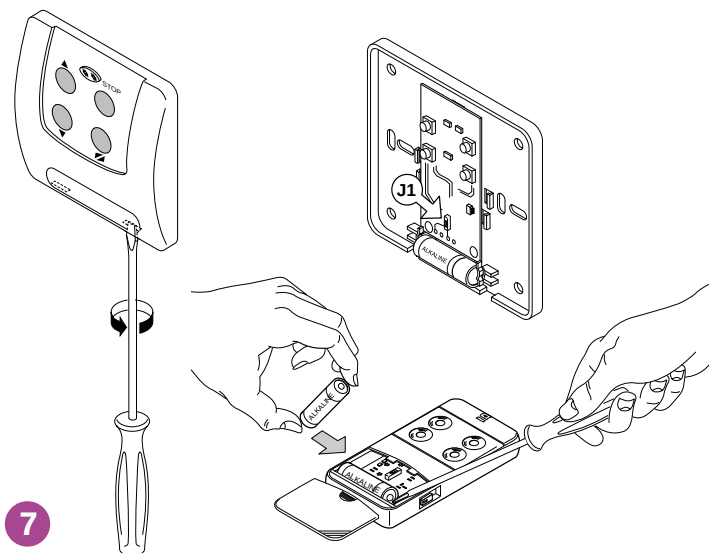
TRANSMITTERS

- carrier frequency 433,92 MHz
- carrier frequency tolerance ±75 kHz
- band width >25 kHz
- modulation AM/ASK
- power supply (alkaline battery GP23A) 12V ± 10%
- maximum power consumption 25 mA
- operating temperature range - 10°...+55°C

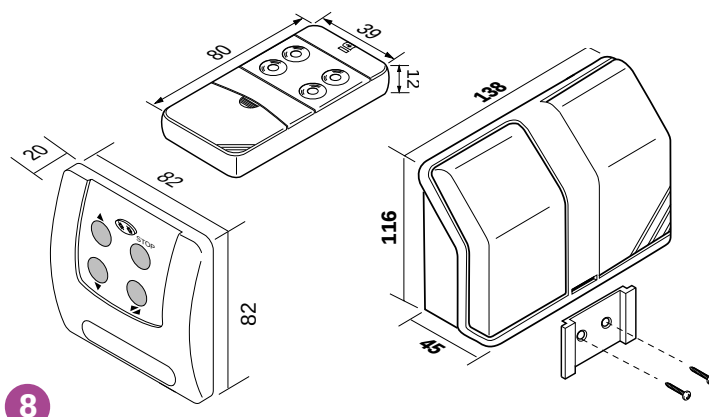
GENERATING THE TRANSMITTER CODE



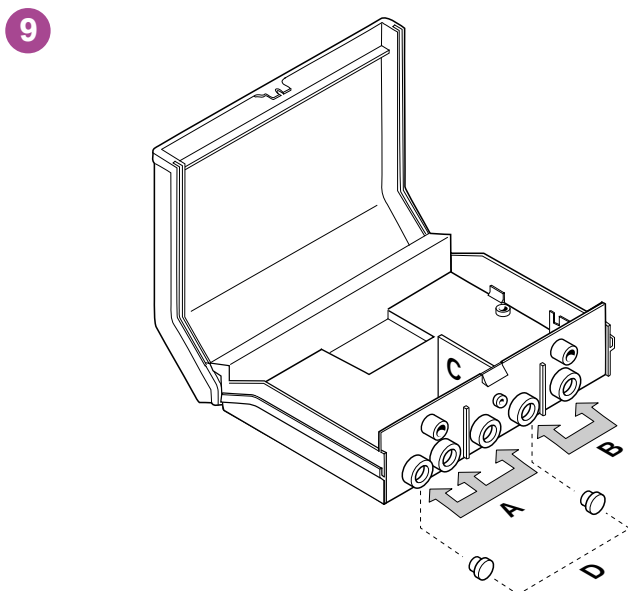
BATTERY REPLACEMENT



EXTERNAL DIMENSIONS



RADIOPROGRAMMER ELECTRICAL CONNECTION



Legend

- A:** Entry holes for 110V~ mains wiring
- B:** Entry holes for low voltage 12/24V wiring + antenna
- C:** Separator wall
- D:** Hole sealing plugs
- LD:** Signal led
- M1:** Memory module
- P1:** Memorising button
- P2:** Delete button
- PW:** Power on led
- SW1:** Function selection dip
- TL:** Work cycle setting trimmer

