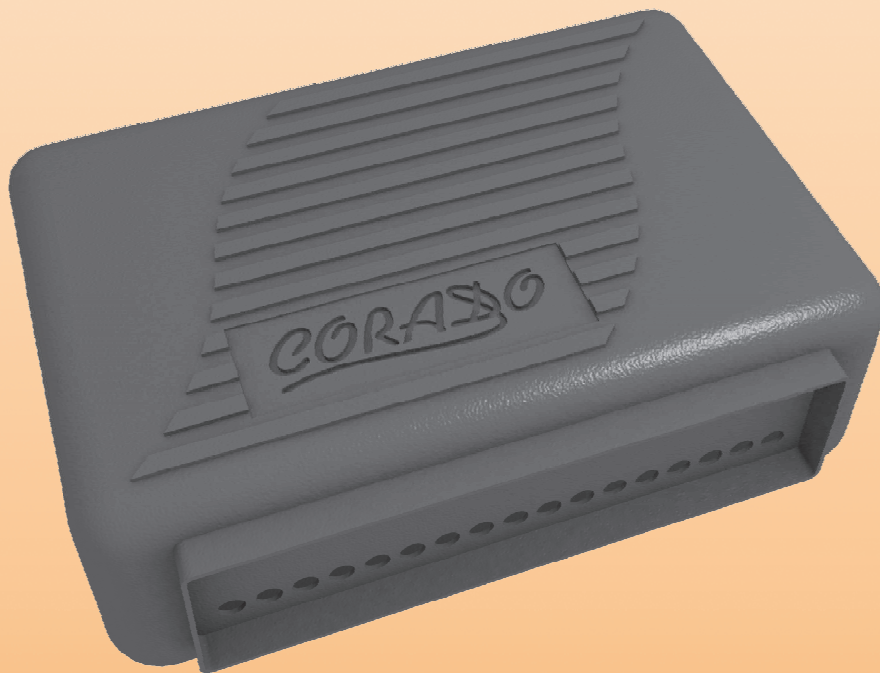


4 channel remote control

Operating Manual & Application Notes



www.LPRS.co.uk
info@lprs.co.uk



General description for SR-4 remote control

LPRS Ltd offer you a 4-channel remote control system with excellent parameters and high quality. The SR-4 is designed for switching all kinds of electrical equipment such as; home alarms, radio receivers, roller-blinds, gates, etc. Transmission between transmitter and receiver use rolling KeeLoq® code delivered by Microchip Inc.

SR-4 system comprises of a receiver and 2 key fob transmitters. Up to 6 key fobs can be programmed for one receiver.

Receiver:

- Power supply 12 V/DC
- Radio frequency 433,92 MHz
- 4 relays with outputs 10 A NO, NC, COM contacts
- Output "S" for acoustic and optical signalling

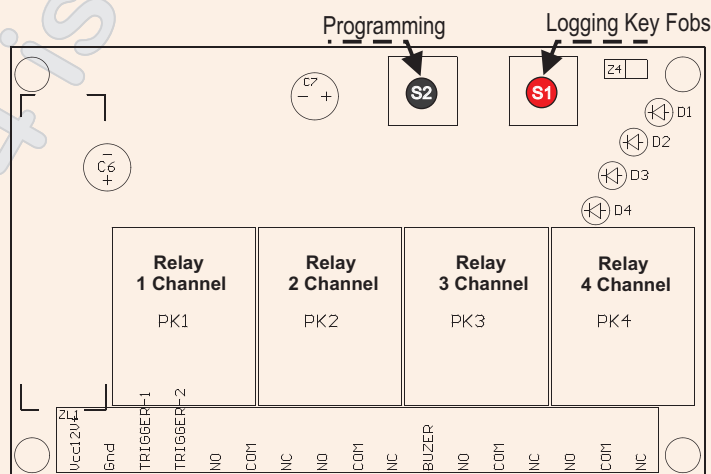
Factory settings

- Channel 1, monostable mode, time 1 second, RESET minus impulse.
- Channel 2, monostable mode, time 1 second, RESET minus impulse.
- Channel 3, monostable mode, time 1 second.
- Channel 4, monostable mode, time 1 second.

LOGGING KEY FOB TRANSMITTERS

- Disconnect power supply from the SR-4 controller.
- Press and hold the red <S1> switch.
- Connect the power supply.
- After 5 seconds release the <S1> switch. Red LED (1 channel) and relay turns on/off simultaneously 3 times.
- Press any push-button of the key fob transmitter and hold it until the LED blinks 3 times.
- The procedure is the same for the following key fob transmitters.
- Disconnect power supply - save and exit.

Important ! The same key fob can be registered several times. While you attempt to log a 6th key fob, the controller indicates the end of the process of logging, save and exit setting.



CHECKING THE QUANTITY OF LOGGED KEY FOBs

System operates with maximum of 6 key fobs. If you press black <S2> switch for a short time, the LED blinks as many times as many key fobs have been logged.

ENTER CONFIGURATION MODE

Before you enter the configuration mode, it is important to disconnect all devices and connect only the 12V/DC power supply. For acoustic signalling connect "S" output (pin No 11).

To enter configuration mode:

- Disconnect the power supply of the SR-4 controller.
- Press <S2> switch.
- Whilst holding <S2> switch, connect the power supply.
- Wait approximately 5 seconds.
- Release the <S2> switch. Red LED blinks twice (relay on 1st channel switches on/off twice). This means that controller entered to the configuration mode on the 1st position.

SAVE AND EXIT

If you wish to exit the configuration procedure and save your settings, press switches <S1> and <S2> at the same time for approximately 2 seconds. We recommend pressing switch <S2> first, then <S1>. Controller will save settings to memory and confirm with 3 blinks of red LED and switching of the relay. After the signalling the controller is ready to work.

EXIT WITHOUT SAVING THE CHANGES

If you wish to exit the configuration procedure without saving, disconnect the power supply of the SR-4 controller for at least 5 seconds.

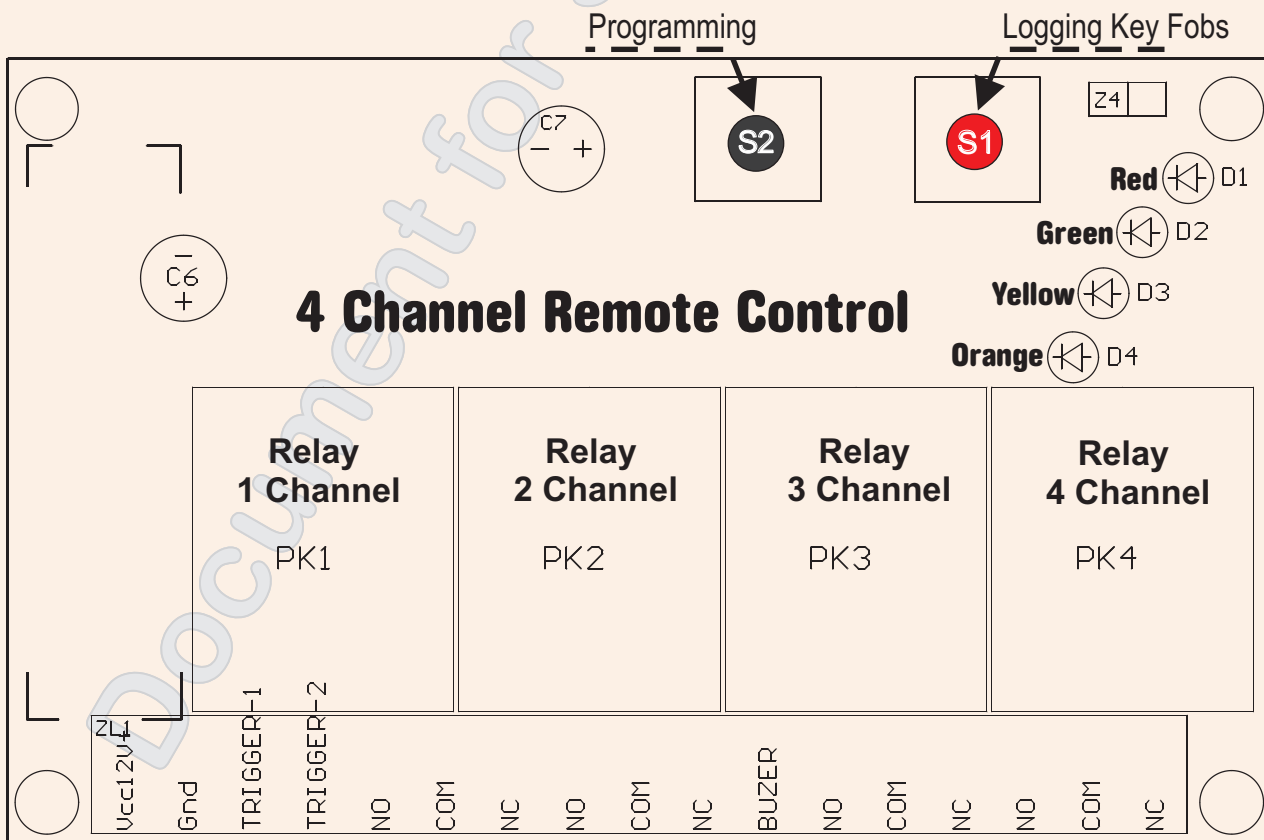
SCHEMATICS DIAGRAM OF THE CONFIGURATION PROCESS

Switch <S1> is used for changing position from left to right and right to left side of the programming table. It enables the registration of start and stop times for monostable mode. Signalling: Led and relay - once.

<S2> switch is used to enter the configuration mode and change settings from 1 to 18.

Each short pressing and holding of <S2> switch move the position to the next position from 1 to 18. Signalling: Led and relay - twice.

One blink of red LED diode (1 channel) after pressing and releasing S1 switch	count of blinks of red LED	Two blinks of red LED diode (1 channel) after pressing and releasing S1 switch
Setting monostable mode for channel 1	1	Setting bistable mode for channel 1
Setting monostable mode for channel 2	2	Setting bistable mode for channel 2
Setting monostable mode for channel 3	3	Setting bistable mode for channel 3
Setting monostable mode for channel 4	4	Setting bistable mode for channel 4
Independent setting of key fob's button channel 1	5	Dependent setting of key fob's button channel 1
Independent setting of key fob's button channel 2	6	Dependent setting of key fob's button channel 2
Independent setting of key fob's button channel 3	7	Dependent setting of key fob's button channel 3
Independent setting of key fob's button channel 4	8	Dependent setting of key fob's button channel 4
Gate setting	9	Standard setting
Gate setting	10	Standard setting
RESET channel 1	11	TRIGGER channel 1
RESET channel 2	12	TRIGGER channel 2
RESET channel 3 (option)	13	TRIGGER channel 3 (option)
RESET channel 4 (option)	14	TRIGGER channel 4 (option)
START time registration for monostable mode for channel 1	15	STOP time registration for monostable mode for channel 1
START time registration for monostable mode for channel 2	16	STOP time registration for monostable mode for channel 2
START time registration for monostable mode for channel 3	17	STOP time registration for monostable mode for channel 3
START time registration for monostable mode for channel 4	18	



SETTING A MONOSTABLE MODE - FROM POSITION 1 TO 4

Each press of the key fob transmitter push-button switches selected channel from 1 to 4 at a previously programmed time.

Channel 1 [1 - 1] monostable mode: From start position press and release <S1> switch twice. Number position signalling - red led blinks once.

Channel 2 [2 - 1] monostable mode: From start position press and release <S2> switch once, then press and release <S1> switch twice.

Channel 3 [3 - 1] monostable mode: From start position press and release <S2> switch twice, then press and release <S1> switch twice.

Channel 4 [4 - 1] monostable mode: From start position press and release <S2> switch three times, then press and release <S1> switch twice.

OPERATING ON MONOSTABLE MODE

Pressing and releasing push-button of the key fob causes the switching time to change. The time can be extended by 3 seconds by pressing the push-button. Pressing and holding the push-button of the key fob causes channels to switch during the time of holding the push-button.

SETTING BISTABLE MODE - FROM POSITION 1 TO 4

Each press of the key fob transmitter switches selected channel on or off from 1 to 4.

Channel 1 [1 - 2] bistable mode: From start position, press and release <S1> switch once.

Channel 2 [2 - 2] bistable mode: From start position, press and release <S2> switch once and then <S1> once.

Channel 3 [3 - 2] bistable mode: From start position, press and release <S2> switch twice and then <S1> once.

Channel 4 [4 - 2] bistable mode: From start position, press and release <S2> switch three times and then <S1> once.

SETTING INDEPENDENT CHANNELS TO SWITCH ON AND OFF - FROM POSITION 5 TO 8

Normally the 1st push-button of the key fob switches the 1st channel on and off and the 2nd push-button of the key fob switches the second channel on and off.

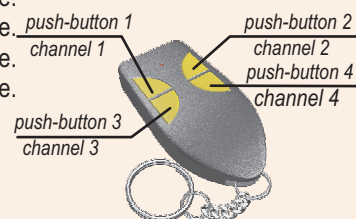
The same procedure is for channels 3 and 4.

Channel 1 [5 - 1] independent: From start position press and release <S2> switch 4 times and then <S1> switch twice.

Channel 2 [6 - 1] independent: From start position press and release <S2> switch 5 times and then <S1> switch twice.

Channel 3 [7 - 1] independent: From start position press and release <S2> switch 6 times and then <S1> switch twice.

Channel 4 [8 - 1] independent: From start position press and release <S2> switch 7 times and then <S1> switch twice.



SETTING DEPENDENT CHANNELS TO SWITCH ON AND OFF - FROM POSITION 5 TO 8

Channel 1 [5 - 2] dependent: From start position press and release <S2> switch 4 times and then <S1> switch once.

Channel 2 [6 - 2] dependent: From start position press and release <S2> switch 5 times and then <S1> switch once.

Channel 3 [7 - 2] dependent: From start position press and release <S2> switch 6 times and then <S1> switch once.

Channel 4 [8 - 2] dependent: From start position press and release <S2> switch 7 times and then <S1> switch once.

Example:
Standard work : 1st push-button of the key fob switches the 1st channel on and off and the 2nd push-button of the key fob switches the 2nd channel on and off. After change of settings to dependent, pressing the 1st push-button switches off the 2nd channel and switches off the 1st. And vice versa pressing the 2nd push-button switches off the 1st channel and switches on the 2nd. The procedure is the same for channels 3 and 4.

GATE SETTINGS FOR POSITIONS FROM 9 TO 10

Channels 1 and 2 together [9 - 1] are gate 1: From start position press and release <S2> switch 8 times and then <S1> switch twice.

1st push-button of the key fob now switches channels 1 and 2.

Channels 3 and 4 together [10 - 1] are gate 2: From start position press and release <S2> switch 9 times and then <S1> switch twice.

2nd push-button of the key fob now switches channels 3 and 4. Can be used for configuring other push-buttons of the key fob.

Example:
For setting the 1st and 2nd channel to bistable mode.
1st channel and 2nd channel together [9-1] on a gate setting.
First press of the 1st push-button of the key fob switches on the 1st channel, second press of the same push-button switches off 1st channel, third press switches on the 2nd channel and the fourth press switches off the 2nd channel.
The procedure is the same for the 2nd push-button for the channel positions 3 and 4 [10-1].

STANDARD SETTING OF THE KEY FOB'S BUTTONS POSITION 9 TO 10

Each push-button of the keyfob switches on and off one of the four channels independently.

1st and 2nd channel [9-2] standard work: From start position press and release <S2> switch 8 times and then <S1> switch once.

3rd and 4th channel [10-2] standard work: From start position press and release <S2> switch 9 times and then <S1> switch once.

RESET (stopping channel work) POSITION 11 TO 14

Channel 1 [11-1] To stop 1st channel from working: From start position press and release <S2> switch 10 times and then <S1> switch twice.

Channel 2 [12-1] To stop 2nd channel from working: From start position press and release <S2> switch 11 times and then <S1> switch twice.

Channel 3 [13-1] To stop 3rd channel from working: From start position press and release <S2> switch 12 times and then <S1> switch twice.

Channel 4 [14-1] To stop 4th channel from working: From start position press and release <S2> switch 13 times and then <S1> switch twice.

Each channel has one Trigger/Reset input. This input can be set as a Reset and respond to ground pulse for longer than 0,2 sec.

If channel is set up on bistable mode, giving signal RESET for that channel will stop the channel working. Signals twice on the output "S".

If channel is set up on monostable mode, giving signal RESET for that channel will stop the channel working with out signalisation on the output "S".

TRIGGER (start channels work) POSITION 11 TO 14

Channel 1 [11-2] To start the 1st channel: From start position press and release <S2> switch 10 times and then <S1> switch once.

Channel 2 [12-2] To start the 2nd channel: From start position press and release <S2> switch 11 times and then <S1> switch once.

Channel 3 [13-2] To start the 3rd channel: From start position press and release <S2> switch 12 times and then <S1> switch once.

Channel 4 [14-2] To start the 4th channel: From start position press and release <S2> switch 13 times and then <S1> switch once.

IMPORTANT! TRIGGER / RESET SOFTWARE SERVICES FOR CHANNELS FROM 1 TO 4

Channels from 1 to 4 have a TRIGGER/RESET input. These 4 inputs responds to electric signals of a lower value than 1,3 VDC and time longer than 0,2 sec. This entry may occur from a supply VDC from 0 to 50 VDC. If above +5 VDC power supply occurs, the diodes will provide a voltage cut-off. Thanks to that solution the device will not be damaged. This input can be set as a TRIGGER. Low level supply signal with time min. 0,2 sec. on input 1 can cause switching of channel 1 (signalling once on the output "S"). If input is still on low level after impulse generation has been set, the system will not extend the time. Next minus impulse (low) on TRIGGER/RESET input with time 0,2 sec will cause extended monostable impulse. Inputs TRIGGER and RESET have two states; as low state - supply from 1,3VDC and as high state - supply above 3,5VDC.

MONOSTABLE START - STOP (time registration for monostable mode) POSITION 15 TO 18

Channel 1 [15] Time registration for channel 1: From start position press and release <S2> switch 14 times. Then hold <S1> switch. This will start the time recording. Releasing this switch will finish the recording.

Channel 2 [16] Time registration for channel 2: From start position press and release <S2> switch 15 times. Then hold <S1> switch. This will start the time recording. Releasing this switch will finish the recording.

Channel 3 [17] Time registration for channel 3: From start position press and release <S2> switch 16 times. Then hold <S1> switch. This will start the time recording. Releasing this switch will finish the recording.

Channel 4 [18] Time registration for channel 4: From start position press and release <S2> switch 17 times. Then hold <S1> switch. This will start the time recording. Releasing this switch will finish the recording.

ADDITIONAL FUNCTIONS

Signalling on/off channels by led and buzzer

Each switch on of the channel setting on bistable or monostable mode is signalling on the output "S" once (minus VDCc for 0,2 sec.)

Each switch off of the channel setting on bistable mode is signalling on the output "S" twice (minus VDC for 0,2 sec.)

Channel operating in monostable mode is not indicated.

Signalling low battery level of the key fob Controller's software is registering each press of the key fob in order to check the level of the usage of the battery. If the battery is low (about 10V)

there will be 6 signals on the "S" output. After that signalisation system begins it's normal operation.

Description of the SR-4 controller outputs:

First black wire - antenna do not cut! This wire should be left hanging free. Do not connect or group with other wires. It has a direct influence on the functioning of the key fob transmitter.

- pin 1 (+) 12 V/DC
- pin 2 (-) minus (ground)
- pin 3 Channel 1 TRIGGER/RESET
- pin 4 Channel 2 TRIGGER/RESET
- pin 5 Channel 1 relay contact NO
- pin 6 Channel 1 relay contact COM
- pin 7 Channel 1 relay contact NC
- pin 8 Channel 2 relay contact NO
- pin 9 Channel 2 relay contact COM
- pin 10 Channel 2 relay contact NC
- pin 11 Signalling output "S"(open collector I max 300mA)
- pin 12 Channel 3 relay contact NO
- pin 13 Channel 3 relay contact COM
- pin 14 Channel 3 relay contact NC
- pin 15 Channel 4 relay contact NO
- pin 16 Channel 4 relay contact COM
- pin 17 Channel 4 relay contact NC

Remote controller
"SR-4"

S2

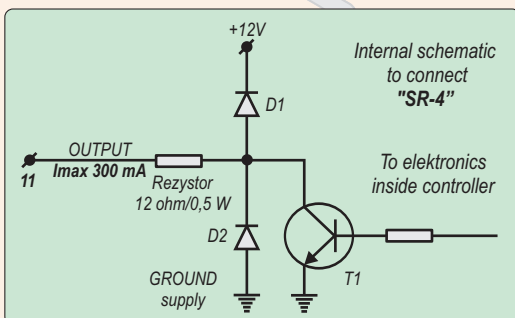
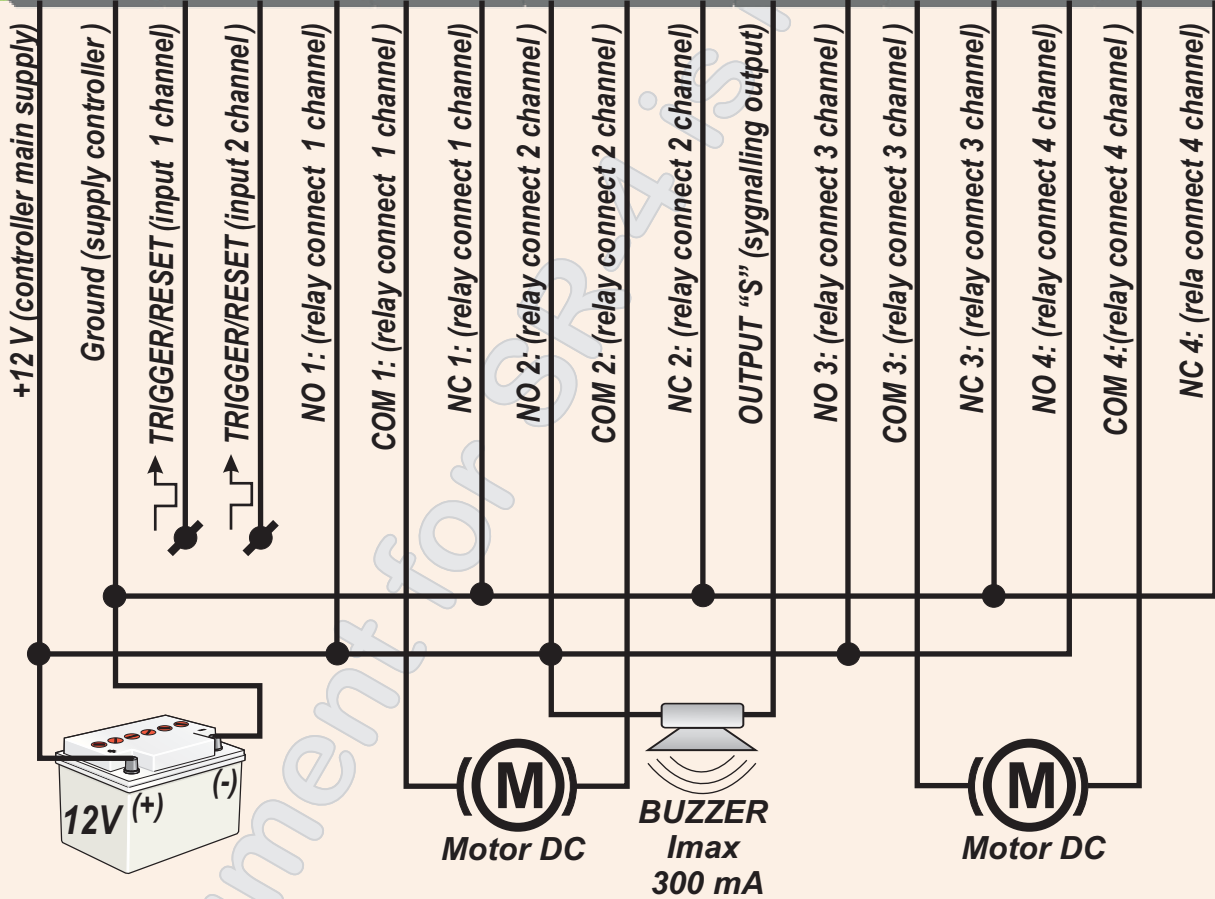
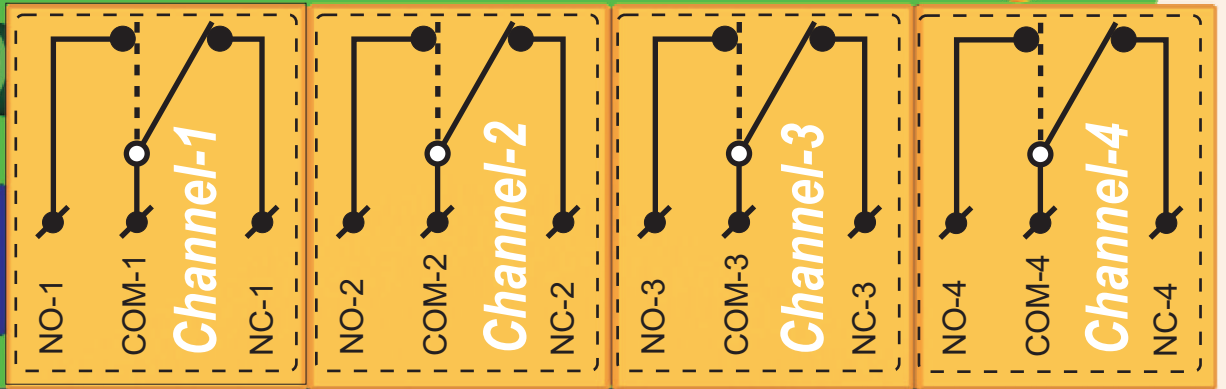
S1

LED 1 channel

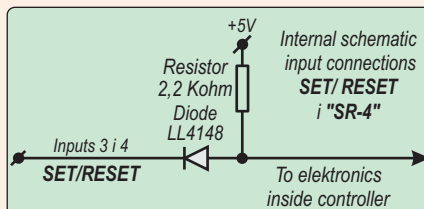
LED 2 channel

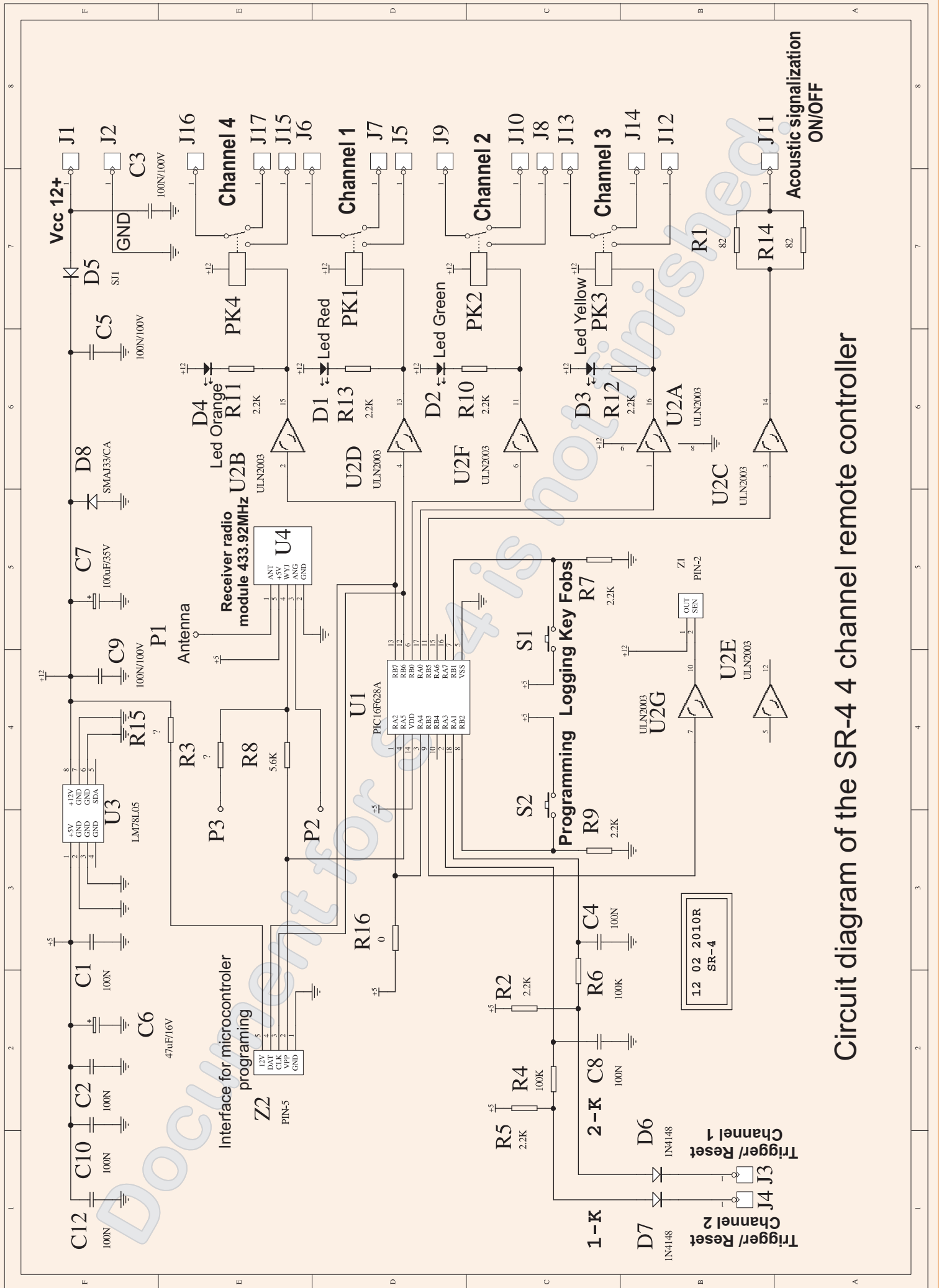
LED 3 channel

LED 4 channel



Sample of connection with using 4 channels controller to open and close double leaf entrance gate or shutters.



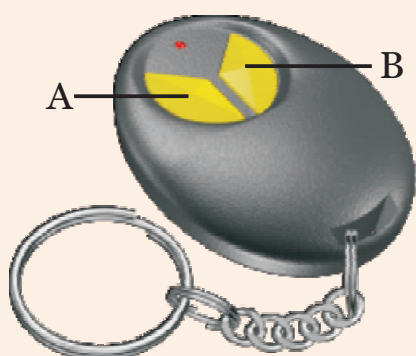


Circuit diagram of the SR-4 4 channel remote controller

Basic technical data:

Average range of key fob transmitters (measured in open space and at low interference level)	50-100 m, $\pm 30\%$
Average A23, I1028 battery type service life	6 to 18 months
Recommended range of correct operation temperatures	-25 to +70 °C
Uz: supply voltage rating	10 VDC to 18 V DC
Iz: supply current all channels off	8 mA, $\pm 10\%$
Iz: supply current one channel on	40 mA, $\pm 10\%$
Iz: supply current two channels on	72 mA, $\pm 10\%$
Iz: supply current three channels on	103 mA, $\pm 10\%$
Iz: supply current four channels on	135 mA, $\pm 10\%$
I_{nc}: maximum supply current relay NC contact	<i>I_{max}</i> 8A
I_{no}: maximum supply current relay NO contact	<i>I_{max}</i> 12A
I_{com}: maximum supply current relay COM contact	<i>I_{max}</i> 12A
I_{bs}: maximum load "S" output	<i>I_{max}</i> 300 mA
Data encoding system: KeeLoq® Microchip Technology Inc	$7,3 \times 10^{19}$
Data transmission frequency of key fob transmitters	433.92 MHz
Sensitivity of radio receiver (superreactive)	50 μ V, $\pm 50\%$
Key fob transmitter average emitting power	5 mW, $\pm 30\%$

Key fob transmitter
"Alien"



Key fob transmitter
"Ring"



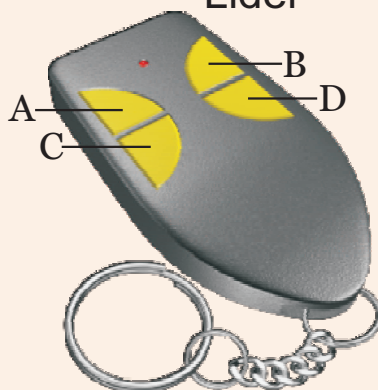
Key fob transmitter
"Duet"



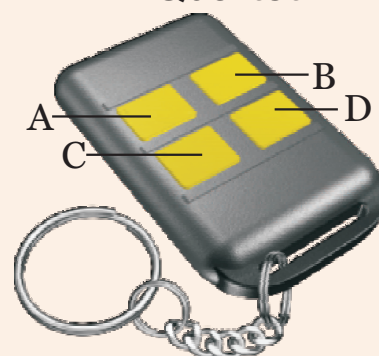
Key fob transmitter
"Banan"



Key fob transmitter
"Lider"



Key fob transmitter
"Quartet"



- A - channel 1
- B - channel 2
- C - channel 3
- D - channel 4

TERMS OF WARRANTY

The manufacturer is obliged to repair the device free of charge if, during the warranty period, flaws occur due to the manufacturer's fault. The warranty is valid 12 months from the date of purchase. The warranty will not be accepted in the following cases: exceeding admissible values of electric current and voltage (included in the manual), operating the device without accordance to the manual, inappropriate fitting and use, making any repairs on one's own, flooding the device with water or any other liquid, tearing or breaking the warranty seal, changing the warranty card, or lacking the document proving the purchase (receipt, invoice). After-warranty service and technical examination of the delivered equipment is chargeable. In the case of complaint, the complete device together with remote controllers and the description of the defect, warranty card, return address and telephone number should be delivered to the point of sale (fitting) first, and in an emergency situation - to the manufacturer.

Decision of the LPRS service concerning warranty repairs is final. Warranty does not include: batteries, equipment and remote control casings, and bundles of wires attached to the equipment. In case of loss or damage the warranty card, copies will not be issued. LPRS takes no material or legal liability for losses resulting from automatic damage of the equipment, random accidents, third-party interferences or inappropriate fitting. Filling in all points contained in the warranty and a readable customer's signature, are basic conditions while examining the request for warranty repairs. Disclaimer Low Power Radio Solutions Ltd has an on going policy to improve the performance and reliability of their products; we therefore reserve the right to make changes without notice. The information contained in this data sheet is believed to be accurate however we do not accept any responsibility for errors or any liability arising from the application or use of any product or circuit described herein. This manual neither states nor implies warranty of any kind, including fitness for any particular application. SR-4 controller is a component part of an end system and should be treated as such. Testing to fitness is the sole responsibility of the manufacturer of the device as is also the deployment into the field. Any liability from defect or malfunction is limited to the replacement of product ONLY, and does not include labour or other incurred corrective expenses. Using or continuing to use these devices hereby binds the user to these terms. For further information and technical assistance please contact:

Tel: **+44 (0) 1993 709418**
email: **info@lprs.co.uk**

Dear customer.

Thank you for purchasing our device. We are convinced that you will fully appreciate the work we have done in developing and manufacturing the SR-4 controller. We believe that the equipment meets your functional expectations with it's high quality performance and reliability. We are open to your comments of the maintenance and operation of the equipment. For further information of the product, please go to: **www.lprs.co.uk**

Thank you very much for your time.



Low Power Radio Solutions Ltd
Two Rivers Industrial Estate
Station Lane
Witney
OX28 4BH
United Kingdom

Tel: **+44 1993 709418**
Fax: **+44 1993 705415**
www.lprs.co.uk