Sequencer

Cod. 90020401

USAGE MANUAL V2.1

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Dear Customer,

We express our thanks for your purchase of the ALEWINGS Sequencer, a timed servo programmer for carrying out any sequence of movements you want.

The device has to be connected to a channel on the receiver (mainly the one associated to an ON-OFF switch) and manages 5 servos or valves; for each of them you can program the travel range, the waiting time and the movement time.

It is installed between the receiver and the servos/valves with some useful features such as:

- Timed activation of one or more servos/valves (up to five, each one independent) by means of an ON-OFF switch on the transmitter.

- For each servo/valve possibility of programming the direction (Normal/Reverse), the travel (ATV) and the time for going from the high end point to the low end point and return.

- Possibility of programming a customized sequence choosing different waiting time for each output, so that you can articulate the movement of the servos/valve as you prefer.

- Protection against short circuit and signal filter for each output. (Very useful when using big powerful servos).

- Security Control (SC): possibility of improving the system adding some end point switches (separately purchased): they check that the movement of one or more of the parts has completed successful before starting the following step of the sequence. This means that you can check that the gears have completely retract before doors start moving (see the concerning sections in Connections and Programming paragraphs).

FIXING

Please fix the Sequencer by using some adhesive Velcro on the downer part of the device. It is recommended to protect the electronic circuit against vibrations from the engine.

CONNECTIONS

Connect the Sequencer to the receiver into the channel associated to the ON-OFF switch you intend to use as starter of the sequence.
Connect the servos/valves to the outputs. Refer to Picture 1.

N.B.: if you intend to use one of the preset sequences, you must connect the servos/valves to the outputs as shown in the Table 1.

If you want to activate Security Control function, please connect one or more end point switches as shown in Picture 1. Place the end point switch so that the circuit results close when the gear leg has completely retract.

To identify the outputs (hereafter called C1,C2,C3, C4 and C5) and the connection polarity, please refer to Picture 1.

PROGRAMMING

Before using the device, you must carrying out the following settings:

1) Initializing of the Sequencer: you have to choice if you want to activate the SC function and to choice one among the preset sequences.
Once you have chosen a sequence, you will be able to modify the preset values for all the parameters.
ATTENTION: activation or not of the Security Control function is always the first choice you have to make. If you decide to activate it after you have entered values for servo travel and time of movement, you will lose all the data entered, as the device resets every time you activate/deactivate SC function.

2) Manual choice, for each output, of travel percentage and time of movement

1) Initializing of the Sequencer:
Please follow the steps below; with your Sequencer not supplied, press and keep pressed the PRG button, than power the device on.
On the display you will see "AL". Please release the button and wait until you see "ON" or "OFF".
- Activation of the Security Control function: press the button Right(R) and Left(L) to choice one of the following options:
ON: the Security Control function is activated
OFF: the Security Control function is deactivated
To confirm your choice press the Program button(PRG);

PROGRAMMING

The Security Control function controls the output C1:
only if the part associated to this output has completed its movement the sequence continues.
Attention: when SC function is activated, it is important that you connect the landing gear servo to the output C1.
Otherwise if The SC function in not activated the assignment of the outputs is free.
Installation of the end point switch: it must be of the "NA" (Normally Open) type, i.e. when it is at rest the circuit is open.
Attention: the rest condition of the switch corresponds to landing gear in extended position.
When the landing gear is completely retracted, the circuit of the switch will be close. This contact will consent the following step of the programmed sequence (usually with the doors locking up).

If the landing gear doesn't retract completely, the device enters the alarm condition:
- you will see "AL" (Alarm) on the display
- the sequence will stop
- the device will impose the automatic opening of both doors and gears

If during the flight, with gears retracted and doors closed, the switch detects the opening of the gears, the device enters the alarm condition as well:
- you will see "AL" on the display
- the device will impose the automatic opening of both doors and gears

When the device is under the alarm condition, the starter control of the sequence on the transmitter (the ON/OFF switch) is disabled.
To reset the device and go back to the operating condition you must turn the device off and then on again.

-Choice of the program (please refer to Picture 2):
After you selected activation or not of the SC function, the device requires that you choose the program.

Program 0: any preset movement; timing and servo travels are 0. The programming is entirely free, included the outputs assignment.
Program 1: manages gear and 2 doors without doors reclosing when the gear is extended. Doors opening gears opening / gears closing doors closing
Program 2: manages gear and 3 doors (a front one [C2] and two in the wings [C3] and [C4]) without doors reclosing when the gear is extended. Doors opening gears opening / gears closing doors closing
Program 3: manages gear and 3 doors (one frontal [C2] and two in the wings [C3] and [C4]) with reclosing of the 2 wing doors (C3 and C4) when the gear is extended.
Program 4: manages gear and 4 doors (two frontal [C2 and C3] and two in the wings [C4 and C5]) with reclosing of the 2 wing doors (C3 and C4) and of one of the frontal doors (C3) when the gear is extended.
Program 5: sequence for testing the sequencer and checking the display and the outputs

Choose the desired program using R and L buttons.
When you see on the display the number of the program you want to select, press the PRG button. You will see "Er" on the display.
Now the Sequencer is ready to carry out the selected sequence.

ATTENTION: the preset programs are only some examples of the several sequences that this device can carry out; they want to be an aid for managing the movements of gears and doors.
Servo travels and timing are preset and maybe they are not suitable for your specific installation. So it is recommended, once you have chosen the program nearest to your needs, to enter the programming menu and select servo travels and timings according to the single case.
Every program you choose allows you to modify all the parameters.

2) Manual programming of the parameters
Please press the "PRG" button and keep it pressed for more than a second.
You will see "CL" or "OP" on the display. Move the control on you transmitter to the position desired for "gear retracted" and then use the R and L buttons to select the voice "CL" on the display.
Press the PRG button for more than a second for saving the choice. You should see "Pr" for one second on the display as confirmation.

Attention: if you see "- -" on the display, it means that the device doesn't read any right signal from the receiver.
Please check if:

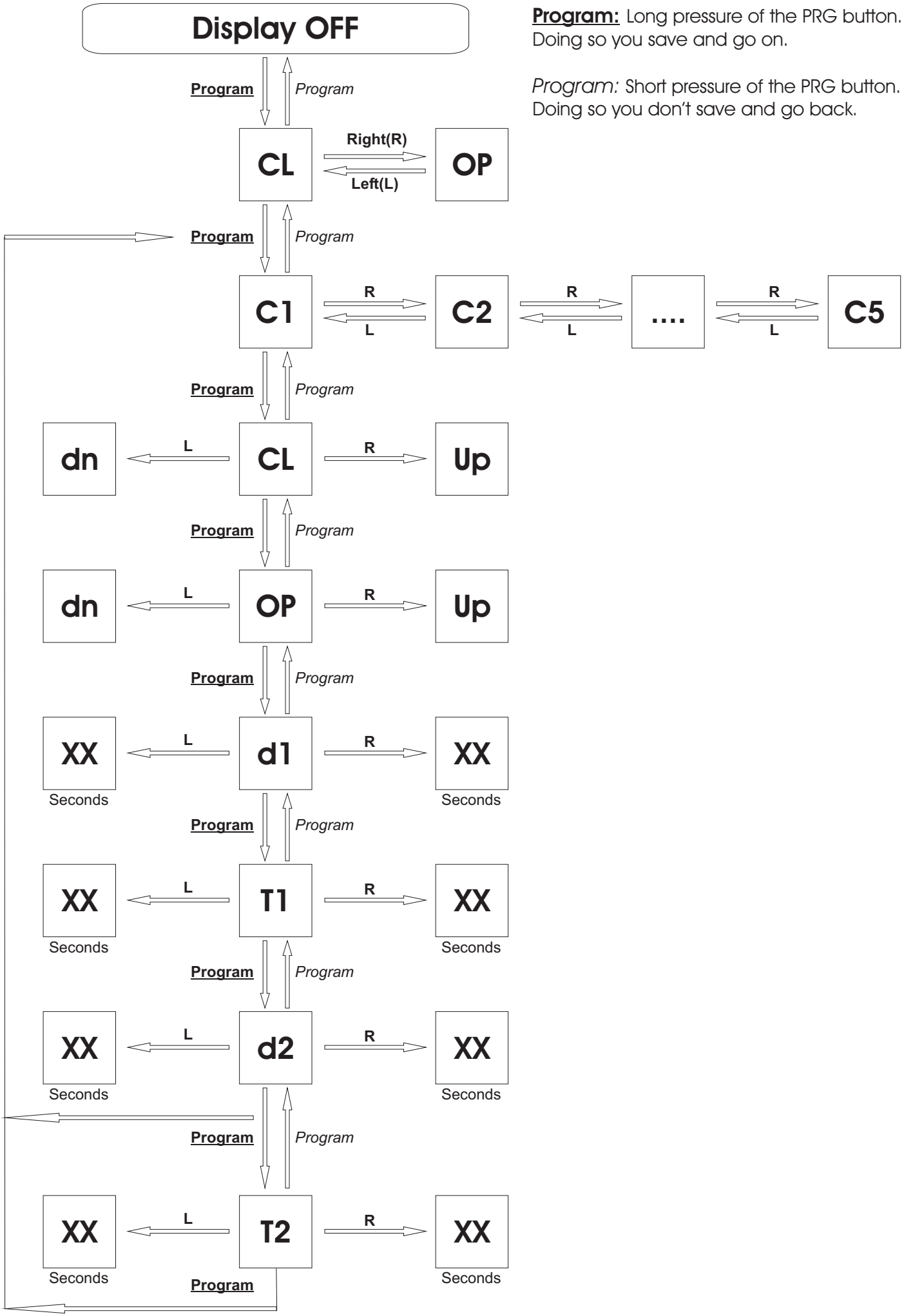
- the receiver is working properly
- the channel you are using for starting the sequence is piloted by a two position control on the transmitter
- the ATV of this channel is more than 50% (it must be so)
- the Dual Rate and Exponential functions are disabled

For each output you can program the following parameters:

- CL: position "close" of the part interested
- OP: position "open" of the part interested
- d1 (delay 1): time between the activation of the sequence and the moment when the part starts to move from CL position (close) to OP position (open)
- T1 (time 1): time taken by the part for going from the CL position to the OP position
- d2 (delay 2): time between the activation of the sequence and the moment when the part restarts to move from the OP position to the CL position. The typical case is when the door closes again after the gears have extended.
- T2 (time2): time taken by the part for going from the OP position to the CL position

Choice of the program:

Output Function	C1 Gear	C2 Door 1	C3 Door 2	C4 Door 3	C5 Door 4
Program 0: any preset movement, timing and servo travels are 0. The programming is entirely free, included the outputs assignment.					
0	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0
Program 1: manages gear and 2 doors without doors reclosing when the gear is extended. Doors opening gears opening / gears closing doors closing					
1	CL = 50% OP = 50% d1 = 4 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 0 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 0 T2 = 2	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0
Program 2: manages gear and 3 doors (a front one [C2] and two in the wings [C3] and [C4]) without doors reclosing when the gear is extended. Doors opening gears opening / gears closing doors closing					
2	CL = 50% OP = 50% d1 = 4 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 0 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 0 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 0 T2 = 2	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0
Program 3: manages gear and 3 doors (one frontal [C2] and two in the wings [C3] and [C4]) with reclosing of the 2 wing doors (C3 and C4) when the gear is extended.					
3	CL = 50% OP = 50% d1 = 4 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 0 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 7 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 7 T2 = 2	CL = 0% OP = 0% d1 = 0 T1 = 0 d2 = 0 T2 = 0
Program 4: manages gear and 4 doors (two frontal [C2 and C3] and two in the wings [C4 and C5]) with reclosing of the 2 wing doors (C3 and C4) and of one of the frontal doors (C3) when the gear is extended.					
4	CL = 50% OP = 50% d1 = 4 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 0 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 7 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 7 T2 = 2	CL = 50% OP = 50% d1 = 0 T1 = 2 d2 = 7 T2 = 2
Program 5: sequence for testing the sequencer and checking the display and the outputs					
5	CL = 50% OP = 50% d1 = 0 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 1 d2 = 0 T2 = 1	CL = 50% OP = 50% d1 = 0 T1 = 1 d2 = 0 T2 = 1



Program: Long pressure of the PRG button. Doing so you save and go on.

Program: Short pressure of the PRG button. Doing so you don't save and go back.

Below you can see the explanation of programs P2 and P3:

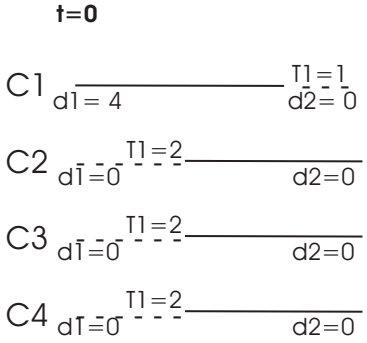
C1 = Landing gear
C2 = Front door
C3 = Right wing door
C4 = Left wing door

Delay : _____

Moving time : ----------

t = 0 Starting point of the sequence, time "zero", when you activate the sequence on your transmitter.
Attention: the devices takes 2 seconds from time 0 before beginning the sequence.
This is a sort of protection from accidental activations as gives you the time for stopping it.
Attention: when you are programming, the starting point is always the "close" position

Program P2:
Manages gear and 3 doors (a front one [C2] and two in the wings [C3] and [C4]) without doors reclosing when the gear is extended.

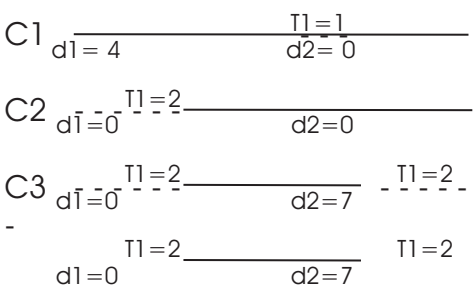


Description:
When you turn the ON-OFF switch from the CL position to the OP position, C1 (landing gear) will wait 4 seconds (d1=4) before moving, while doors C2, C3 and C4 will start moving immediately (d1=0) and will take 2 seconds (T1=2) to move from CL position to OP position. The output C1 will take 1 second (T1=1) to go from the CL to the OP position.

You started with the gear retracted and the doors closed and ordered the opening of the doors and afterwards the extension of the gear.

If you turn the ON/OFF switch back to the CL position, the program will be carried out backwards starting from the time t=END.

Program P3:
Manages gear and 3 doors (one frontal [C2] and two in the wings [C3] and C4]) with reclosing of the 2 wing doors (C3 and C4) when the gear is extended.

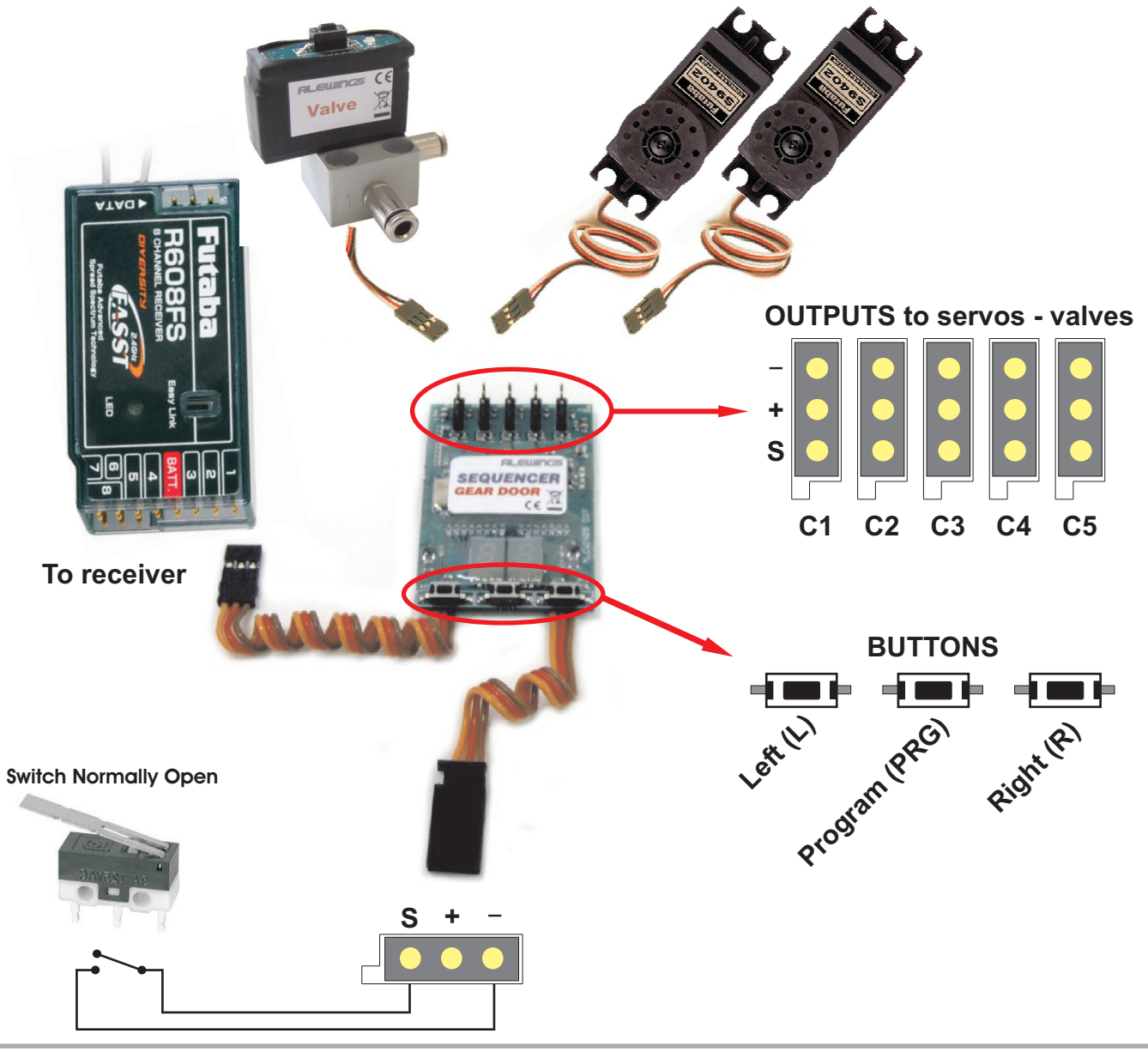


Description:
When you turn the ON-OFF switch from the CL position to the OP position, C1 (landing gear) will wait 4 seconds (d1=4) before moving, while doors C2, C3 and C4 will start moving immediately (d1=0) and will take 2 seconds (T1=2) to move from CL position to OP position. The output C1 will take 1 second (T1=1) to go from the CL to the OP position. The output C1 will take 1 second (T1=1) to go from the CL to the OP position.
After a time of 7 seconds (d2=7) from the starting of the sequence, doors C3 and C4 will reclose.

Attention: the choice of d2=7 for the doors takes into account the values d1=4 and T1=1 chosen for the gear C1, with a margin of other 2 seconds. This means that doors C3 and C4 will reclose 2 seconds after that the gear has extended completely.

You started with the gear retracted and the doors closed; you ordered the opening of the 3 doors, afterwards the extension of the gear and once the gear has extended, the reclosing of the two wing doors.

PICTURE 1



WARNING

This is not a toy.
Pay close attention to the following points, as the non observance of them can destroy the product, nullify your warranty and lead to property damages or personal severe injuries!
- Never leave the product unattended while it is switched on, in use or connected with a power supply. If a defect occurs, it could set fire to the product or to the surroundings.
- Avoid incorrect connections or connections with reversed polarity.
- All wires and connections have to be well insulated. Short-circuits might destroy the product.
- Never allow this product or other electronic components to come into contact with water, oil, fuels or other conductor liquids, as these could contain minerals, which are harmful for electronic circuits. If this happens, stop the use of your product immediately and let it dry carefully.
- Always wire up all the parts of the equipment carefully. If any of the connections loosens, due to vibrations, you might damage your device.
- Never cut off or modify the original plugs
- Never change the polarity of the receiver connectors
- Do not open the product and never solder on the PCB

SPECIFICATIONS

Dimensions:	52x36x10mm
Weight:	18gr including cables and connectors
Supply voltage:	from 5,1V to 8,4V
Batteries:	5 cells Nixx, 2s Life, 2s LiPoli
Output voltage:	not stabilized, direct from battery
Max load for each output:	3A continuous, with short circuit protection
Current drain:	40mA (display OFF)
Precision servo programming	0,1°
Range ATV programming	+-100%
Working temperature:	-10 up to +60 °C

These specifications may be changed without advance notice.

WASTE DISPOSAL

At the end of its life cycle this product is subject to special waste disposal and it cannot be disposed with urban waste