OPERATING INSTRUCTIONS FOR THE STARLIGHT CONTROL UNIT MODEL AE0822

CE

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1. General information

The Starlight control unit is a system providing remote control of motors equipped with a limit switch. It can actuate motors with an electro-mechanical or electronic limit switch, as well as other devices with neutral control contacts.
Since it uses only two channels (raise and lower) per transmitter, the Starlight unit can recognise up to **32 transmitters**. If **centralisation** is desired, one transmitter can control a virtually **unlimited number of control units**.
The enabling or cancellation of channels for one or more transmitters can be carried out from the control unit or directly on the transmitter itself.
Since the transmitters used are compatible with the Jolly Sat system, centralised configurations with mixed actuation methods can be set up if needed.

When the control button on a transmitter is pressed, an UHF radio signal is sent. The signal contains a highly reliable code composed of 66 "Rolling code"-type digits, which means that the code is changed at every transmission using an algorithm that only the receiver can recognise. This code is maintained in memory even if a power failure occurs. Besides receiving commands via radio, the Starlight control unit can handle commands sent by a traditional keyboard over a cable. The unit also features an emergency stop function controlled by a normally closed, external contact.

Warning:

- Never install the controller on a metal support.
- The controller may be sensitive to external elements such as metal bodies and electromagnetic fields, capable of reducing controller capacity. Before installation verify the correct exchange between the controller and the motors to be driven.

2. Technical specifications:

2.1 Starlight control unit

- Voltage requirement : 230 VAC ± 10% 50 Hz
- Max. output current : 5 A, cosφ 1.2; 2 A, cosφ 0.4
- Nominal voltage on contacts : 250 VAC 50 Hz
- Operating time of output contacts : 1 to 90 sec. (adjusted on TL)
- Usage temperature : -20 to +60°C
- Receiver frequency : 433.92 MHz
- Local oscillator frequency : 433.42 MHz
- Intermediate frequency : ±75 KHz
- Local oscillator emission : < 57 dBm
- IF intermediate frequency : 500 KHz
- Input impedance : 50 Ω
- Sensitivity (signal resulting in actuation) : 1 µ V

2.2 Transmitter

- Voltage requirement (GP23A alkaline battery) : 12 V ± 10%
- Max. current draw : 25 mA
- Apparent radiated power : -20 to -16 dBm (10 to 20 µ W)
- Apparent radiated power of harmonics : < -54 dBm (< 4nW)
- Carrier frequency : 433.92 MHz
- Carrier frequency tolerance : ±75 KHz
- Bandwidth : > 25 KHz
- Modulation : AM / ASK
- Ambient temperature : -10 to +55°C

3. Control devices

Besides the capability of being controlled by one or more radio transmitters, the Starlight unit can be controlled (in exactly the same manner) using two external, normally-open buttons connected to the unit by cable.
Furthermore, a normally closed contact (for example, a button) can be connected to the unit to obtain an emergency stop function.
During a movement (for example, raising), if the opposite command (for example, lowering) is given by pushing the relative button, the movement will stop. Pressing the button a second time can then start the opposing movement (compared with the initial one).
To facilitate the testing of raising and lowering movements when the control unit is placed into service, the unit is equipped with two control buttons (TA and TC) on the inside.
Also, connecting or disconnecting internal bridge connection J3, as described in paragraphs 3.1 and 3.2 can vary the operating logic of the control buttons.

3.1 Automatic operation

The control unit operates "Homo Present" when bridge connection J3 is disconnected. This functioning mode, operator is present, and he is commanding by pushing a button on a transmitter (as well as any command given by a pushing a button connected by cable). The command is maintained until a new one is given or until expires the operating time, selected by the TL (see par. 6).
Movements can be stopped immediately by opening the STOP contact or by pressing the button which controls movement in the opposite

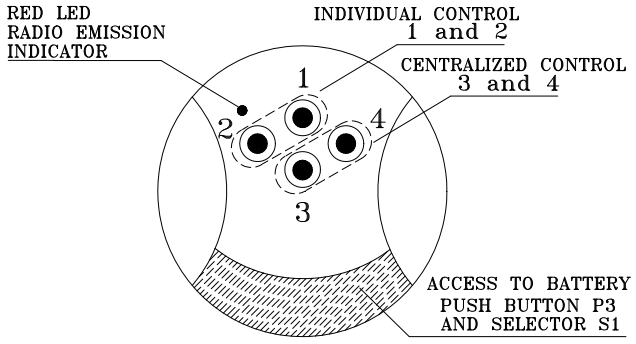
3.2 Continuously-actuated manual operation

When bridge connection J3 is connected, continuously-actuated manual operation is obtained; that is, all manual or radio-controlled movements continue for as long as the relative control button is held down, and movement stops immediately when the button is released.

4. Transmitter

Transmitters are directly encoded by Jolly Motor using code matrixes that are different from one another.
If a key is held down for more than 30 sec., the transmitter is automatically deactivated.

External elements

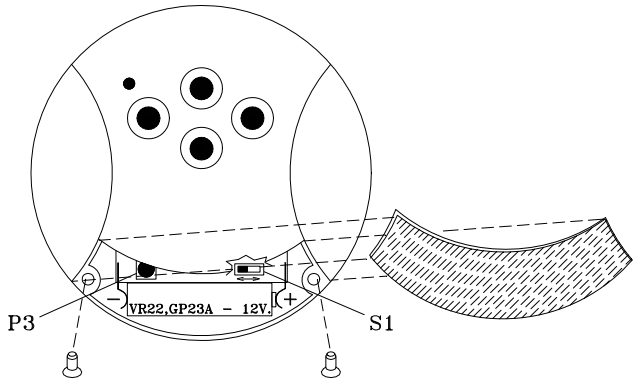


Pic. 1

Note : If during the first motor activation the roller tube movement is opposite to the push button command indications invert it by changing the deviator's **S1** postion. See Pic.2.

- **The Individual control with : 1 = Raising, 2 = Lowering**
- **The Centralized control with : 3 = Lowering , 4 = Raising**

Internal elements



Pic. 2

5. Enabling and cancelling channels on a transmitter

NOTE: These operations can be performed directly on the transmitter or from the Starlight control unit.

5.1 Enabling performed directly on the transmitter

First system: This procedure applies only if no other transmitter has been enabled in Starlight memory.

1- Open the cover on the transmitter as shown in Fig. 2.
2- Press button P3 on the transmitter. The Starlight control unit will emit a continuous sound for 5 seconds, which shows that it is entering the enabling mode.
3- Within 5 seconds, press the button (on the transmitter) for the channel to be enabled.
4- The Starlight control unit will emit an intermittent sound, which shows that the channel has been enabled.

The first channel of transmitter enabled in Starlight memory will become the master, which can then be used to enable additional channels or transmitters. Proceed as follows:

1- Open the cover on the transmitter, which has been enabled in Starlight memory (master).
2- Press button P3. The Starlight control unit will emit a continuous sound for 5 seconds, which shows that it is entering the enabling mode.
3- Within 5 seconds presses the button for a channel, which has already been enabled.
4- The sound emitted by the control unit will be interrupted for 1 second, and will then resume for 5 more seconds.
5- Within this last 5 seconds select the new channel to be enabled.
6- The Starlight control unit will emit an intermittent sound, which shows that the channel has been enabled.
7- Repeat steps 2 through 6 to enable additional channels.

5.2 Enabling performed from the Starlight control unit

It is a good idea to delete the entire contents of memory before each initial installation (see chap. 5.4).

1- Hold down button P1. After 1 second, the Starlight control unit will emit a continuous sound.
2- Press the button for the channel to be enabled. The Starlight control unit will emit an intermittent sound, which shows that the channel has been enabled.
3- Repeat steps 1 and 2 for each channel to be enabled on the control unit.

Note: If the enabling operation is not successful:
a) Make sure that the channel has not been previously enabled;
b) Make sure that the memory in the control unit is not full (64 channels, max.). To check for full memory, switch off the power to the control unit and then switch it back on. The unit will emit an intermittent sound for 3 seconds at start-up if the memory is full.

5.3 Cancellation performed directly on the transmitter

To cancel a transmitter channel from control unit memory via radio, proceed as follows:

1- Open the battery cover on the transmitter.
2- Press key P3 inside the transmitter three times at regular intervals within a 5-second period. The control unit will emit an intermittent sound.
3- Within 5 seconds presses the key for the channel to be cancelled. The sound made by the control unit will stop when cancellation is completed.
4- Repeat steps 1, 2 and 3 for each channel to be cancelled.

5.4 Cancellation performed from the Starlight control unit

To cancel a channel, proceed as follows:

1- Hold down key P2. After 1 second, the Starlight control unit will emit an intermittent sound. Now, release P2.
2- Press the button for the channel to be cancelled. The control unit will emit a continuous sound, which shows that the channel has been cancelled.
3- Repeat steps 1 and 2 for each channel to be cancelled.

To delete all the channels stored in memory, proceed as follows:

1- Hold down key P2 for at least 1 second, and then release it. The control unit will emit a slowly intermittent sound.
2- Immediately (within half a second) press P2 again and hold it down for at least 10 seconds. The slowly intermittent sound will now change to a rapidly intermittent sound and then to a continuous sound. Release P2. The memory in the control unit is now completely empty.

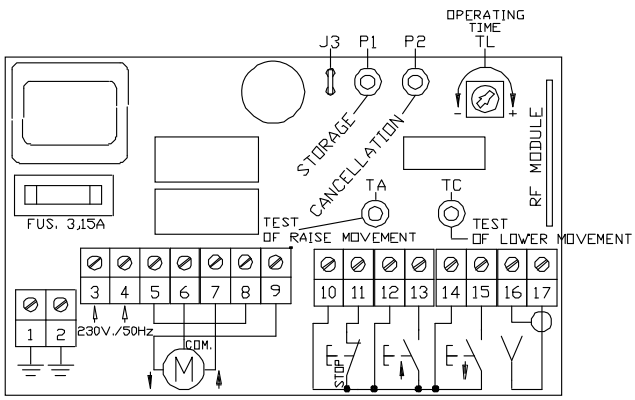
6. Adjustments

The only adjustment required is setting the operating time of the output contacts; that is, the amount of time a command to the motor (raising or lowering) is automatically maintained by the control unit.
This time can be adjusted from 1 to 90 seconds on trimmer TL, which is located in the control unit.

NOTE: Since the operating time is read every time a movement begins, adjustments made during movement will not be recognised.

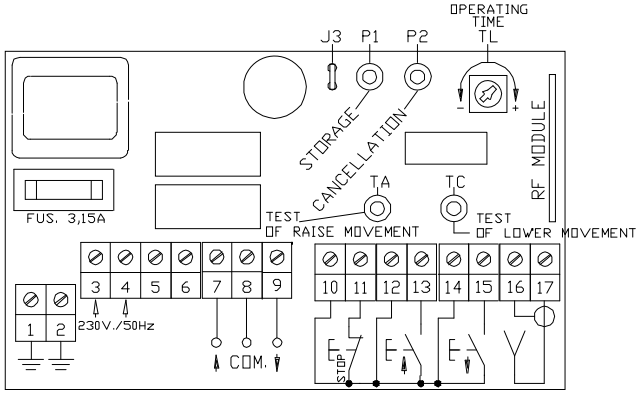
7. Electrical connections

7.1 Connection to a gear motor with an Electro-mechanical limit switch



Pic.3

7.2 Connection to a gear motor with an electronic limit switch or to other systems



Pic.4

7.3 Antenna

To assure dependable operation, the control unit requires an antenna connected as shown in figs. 3 and 4. This antenna can be a simple copper wire with a length of 17 cm, which is connected directly to terminal 17.

For best range, it is a good idea to use an outdoor antenna which is specifically cut for the working frequency and connected using an RG58 coaxial cable with a maximum length of 15 metres (the entire antenna system must have an impedance of 50Ω).

Term. no.	Type of connection
1	Ground from mains power connection
2	Ground from motor connection
3	Mains power input connection (phase)
4	Mains power input connection (neutral)
5	230 VAC output (phase) to be connected to terminal 8 when motors with an electro-mechanical limit switch are used
6	230 VAC output (neutral), common connection for motors with an electro-mechanical limit switch
7	Output for "raise" command
8	Output of common operation to be used for contacts with neutral connections or to be connected to terminal 5 when motors with an electro-mechanical limit switch are used
9	Output for "lower" command
10-11	External STOP contact, normally closed
12-13	External RAISE contact, normally open
14-15	External LOWER contact, normally open
16	Ground pole of antenna connection
17	Central pole of antenna connection