

CTR32

MANUALE D'ISTRUZIONI
INSTRUCTIONS MANUAL
MANUEL D'EMPLOI
ANWEISUNGSHANDBUCH

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ENGLISH

A) – Scope of the device

Electronic board controlling 1 or 2 230 Vac single-phase asynchronous motors for the automation of a single or two-wing gate.

B) – Limits to use

Caution : Before operating the electronic unit make sure the following operations have been carried out.

- Note 1** – Read carefully the whole technical documentation supplied.
- Note 2** – The electronic unit must be installed by qualified personnel only. The installation engineer must have the necessary technical and professional qualification.
- Note 3** – The mains power supply connected to the unit must be 230 Vac +/- 10%.
- Note 4** – The neutral (N) pole of the mains power supply must be unipotential to the ground.
- Note 5** – All security norms for the installation of electric and electronic devices must be respected.
- Note 6** – The mains power must be supplied with an efficient differential switch tested and calibrated in conformity with the applicable rules.
- Note 7** – Before installing the electronic unit check the motors to which it will be connected. When the motors are connected to the mains power the torque they apply to the gate must respect the applicable rules and, in any case, it must be such that in case of collision no damage will be caused to persons, animals or objects.
- Note 8** – The unit must be applied for the intended use only (see point A). All other use is to be considered improper and dangerous.
- Note 9** – Before acceding to the electronic unit's box for any intervention check that the mains power has been cut off.
- Note 10** – Do not access the unit with wet/damp hand or feet.
- Note 11** – Do not expose the unit to weather (rain, snow, etc.)
- Note 12** – Do not allow any children or unqualified persons to touch the unit.
- Note 13** – The electronic unit must be placed in the box supplied.
- Note 14** – The plastic material used for the box is not self-extinguishing. Therefore it must be installed in an well aired place far from any objects or elements that can cause fire.
- Note 15** – The ordinary maintenance of electronic unit must be executed by qualified personnel every 6 months.

Caution: Failure to respect the above listed norms can cause damage to persons, animals or objects. The manufacturer can in no way be held responsible for such damage.

C) – Installation

- 1) Unscrew the cover screws and lift the cover. Check that the electronic unit is in good order. In case of doubt do not install the unit and ask for the intervention of qualified personnel. The container's accessories (screws, round seal, cable glands) must not be left within the reach of children since they are a potential danger.
- 2) Check that the electronic unit is properly fixed to its box. If not, tighten all screws or provide the missing screws.
- 3) Place the unit near the gate so that the system connection wires' length is reduced to the minimum.
Caution: For the unit's correct operation the wires connected to it must not be longer than 10 metres.
- 4) For increased weather protection we recommend to place the unit under a roof or, even better, in an enclosure having two side walls. Wherever possible, it is advisable to install the unit at a minimum 1,5 mt level above the ground to keep it out of the reach of children.
- 5) Before proceeding to assembly place the container so that the side fitted with the cable glands is directed towards the ground.
Caution: Do not assemble the container on wood surfaces.
- 6) Insert the supplied round seal in its seat. Make sure the two ends meet at the centre of the side to which the cable glands are fitted.
- 7) Lift the mobile portion of the connector and proceed to connect the unit wires as described in the following chapters.

D) - Operation

1) Definitions of Controls

Start

Input connected to a push-button placed outside the unit. It is employed to request the gate's opening or closure (for both wings). This input is usually connected to a key push-button.

Pedestrian Start

Input connected to a push-button placed outside the unit. It is employed to request the opening or closure of one wing only (pedestrian wing) to allow the passage of persons or animals.

2) Definitions of Safety devices

Stop

Input connected to a push-button or switch placed outside the unit. It is employed to cause the gate's immediate stop. This control must be used in an emergency situation.

Photo-cell

Input connected to an optical barrier. It detects and signals the passage of persons or vehicles in the area crossed by the gate or in the nearby area.

Photostop

Input connected to an optical barrier. It detects and signals the passage of persons or vehicles in the area crossed by the gate or in the nearby area.

3) Definitions of Outputs

Blinker

Lamp's on/off control. The lamp functions as a warning and optical signaller of potential danger for the gate's motion.

Motor 1

Outputs for the opening/closure control of the motor which drives the first gate wing during the closing phase.

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Motor 2

Outputs for the opening/closure control of the motor which drives the gate wing delayed during the closing phase. This wing is usually connected with an electric lock.

Electric lock

Impulse control for the electric lock release.

Courtesy light

Continuous control for the lamp which lights the area around the gate. The lamp is lit for approx. 2 minutes after the cycle has ended. During the pause before the gate closes back the lamp is lit.

Open gate lamp

Continuous control for the lamp that signals the gate's position. La lamp goes off only after the gate has completely closed

4) Definitions of Power Supply Inputs/Outputs

230 Vac mains power

Input for the electronic board power supply.

24 Vac low voltage

Power supply output for the photo-cells and/or any other accessory devices.

5) Definitions of Accessory Inputs/Outputs

Aerial

Input for the connection of a radio receiving aerial. This input can only be used if a radio receiver card is connected to the unit.

6) Definitions of Optical Signals

DL3 – Photo-cell led (yellow)

It signals the optical barrier's state. The led goes off when the photo-cell is covered by persons or vehicles

DL2 – Photostop led (yellow)

It signals the optical barrier's state. The led goes off when the photo-cell is covered by persons or vehicles

DL4 – Stop led (red)

It signals the gate's block state. The led goes off when the stop control is operated (emergency).

DL6 – Start led (green)

It is lit when the start control is operated.

DL5 – Pedestrian start led (green)

It is lit when the pedestrian start control is operated.

DL1 – Programming led (red)

It is lit (together with the blinker) in the programming phase and during the gate's motion.

7) Definitions of Trimmers

RV1 – Slow-down speed and power regulator

It defines the gate's speed during the slow-down phase and it regulates the power supplied to the motors during the normal speed phase.

8) Definitions of Dip Switches (Selection of Programs)

Dip switch 1

It chooses whether the unit will operate in the mode determined by dip-switch 2 or in condominium mode : ON=Condominium OFF=No effect

Dip switch 2

It chooses whether the unit will operate in step-by-step mode or in automatic mode : ON =Automatic OFF=Step by step

Dip switch 3

It enables the operation with a single-wing gate : ON=Single wing OFF=Double wing

Dip switch 4

It enables or excludes the **kickback** (during the opening phase with closed gate) and **extra-push** (during the closure phase) procedures :

ON= Kickback enabled OFF=No effect

Dip switch 5

It enables or excludes the delay between the wings' starts : ON= 0 sec Delay OFF=Delay enabled

9) Definitions of Programming Keys

P1

Allows to insert/cancel the radio-command codes in the memory

P2

Allows to set the motors' work time and the M2 motor's closing delay time

P3

Allows to set the pause time

10) Definitions of Protection Fuses

F1 – Mains power fuse (5A)

It disconnects the electronic unit from the power supply mains in case of short-circuit or electric current consumption anomalies.

F2 – Low voltage fuse (1A)

It protects the electronic unit in case of short circuits or overcurrents on photo-cells, electric lock or any other accessory devices connected to the 24 Vac power supply

11) Technical features

Power regulator

Regulating the RV1 trimmer it is possible to reduce the power supplied to the motors during the normal speed phase.

Caution: In case failure or anomaly of the power regulator card the motors may operate at their maximum power value. This is why n° 7 note in the previous chapter "limits to use" must absolutely be put into practice.

Starting of maximum start up power

When any of the motors starts the unit supplies the maximum power value for approx. 1 sec. Subsequently the power regulator operates. This particular feature allows to overcome the high negative torque at the motors' start.

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Radioreceiver

The electronic unit contains a two-channel radio receiver allowing remote control of the gate by means of the radio transmitter. The radio receiver channel 1 acts as **Start** control and channel 2 acts as **Pedestrian start**. The radio receiver operates with a self-learning logic and can store up to 12 different codes from the radio-commands. Each code may be addressed on the desired channel (Start or Pedestrian start). The memory contents is preserved in absence of power supply. The memory contents may be erased (total cancellation).

In alternative the electronic unit is pre-set for the optional connection of an accessory radio receiver card. The channel 1 of the radio receiver card ends with a non-polarized electric contact (relay) directly connected to the **start** input. The channel 2 of the radio receiver card ends with a non-polarized electric contact (relay) directly connected to the **pedestrian start** input.

Blinker

The electronic card supplies an on/off control (flashing light) to the lamp. The logic of the blinking allows displaying the gate's operating.

Quick flashing light : it signals the opening phase

Slow flashing light : it signals the closing phase

Fixed light : it signals that the gate is blocked in wait that the obstacle that covers the photocell or photostop to be removed.

The device supplies an on/off control (flashing light) to the lamp for approx. 1 sec. before the motors start (**pre-alarm**).

Open gate lamp

The electronic card controls a lamp that displays the gate's position. The lamp is off when the gate is completely closed and is lit in all other cases.

Work time

The motors' work time is controlled by two independent digital timers.

If any command interrupts the wing's travel before its end, the Timer stops and the elapsed time is stored in memory. Therefore the unit can determine, with a fair approximation, the partial working time necessary to the wing to end its travel. Thanks to this feature it is possible to avoid that the motor works for a long time after the end of the wing's travel, thus reducing overheating to the minimum.

Warning : In case of absence of power supply the stored position will be lost.

Kickback / extra-push

This procedure can be enabled or excluded. It is usually employed to help the electric lock insertion and release during bad weather conditions (wind, ice, etc.). The "**kickback**" procedure consists of a logic sequence operating the electric lock during a short closure phase (approx 1 sec.) with the gate closed. The electric lock is released only after the wing has started its opening motion. The "**extra-push**" procedure is enabled only during the closing slow-down phase near at the end of the wings' travel. It consists of a short acceleration of both wings (approx. 1 sec.) to help the electric lock's insertion.

M1 delay at opening

The unit causes a fixed delay of approx. 2 seconds between the first wing's (M2) and the second wing's (M1) start during the gate's opening phase. This delay is imposed irrespective of the position from which the gate starts to open. This delay may be cancelled by setting the **dip switch 5 =ON**.

12) Operation modes

Introduction

The electronic unit contains a micro-processor to control the gate's operation modes. These are the four main operation phases :

Phase preceding the gate's motion

Gate's fast motion phase

Gate's slow motion phase

Gate's pause phase (open gate)

The unit can function in three modes :

Step by step – This mode is enabled by setting the dip switches 1=OFF 2=OFF

Automatic – This mode is enabled by setting the dip switches 1=OFF 2=ON

Condominium– This mode is enabled by setting the dip switches 1=ON 2= No effect

The **Condominium** mode is the priority operation mode. If more than one modes are selected the priority mode will be enabled.

Notice: The operation logic setting (dip switch), the work time programming and the pause time programming must be carried out only if the cycle is concluded or before it starts (with closed gate).

The opening and closure cycles are enabled by a **Start** or **Pedestrian start** control.

Important : Whatever logic has been selected, the first Start command after the power is supplied to the electronic card will always cause the start of an opening cycle.

“Step-by-step” mode

After the power is supplied to the electronic card the first start command determines an opening cycle. At the end of the two work times the gate stops. The operating cycle is completed (blinker off) and the system waits for a new start command to determine the closing cycle. If a start command is supplied when the end of travel has not been reached yet the gate stops. A new start command will cause the reversal of the motion.

“Automatic” mode

After the power is supplied to the electronic card the first start command determines an opening cycle. At the end of the two work times the gate stops. The pause period starts. At the end of the pause period the gate closes automatically. The operating cycle is complete only when the closing motion has ended (blinker off). If a start command is supplied before the end of travel is reached the gate stops. A new start command will cause the gate to reverse its motion. If a start command is supplied during the pause period the operating cycle is interrupted and the gate does not close automatically. A further start command will determine a closing cycle.

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“Condominium” mode

After the power is supplied to the electronic card the first start command determines an opening cycle. At the end of the two work times the gate stops. The pause period starts. At the end of the pause period the gate closes automatically. The operating cycle is complete only when the closing motion has ended. If a start command is supplied while the gate opens, the command will have no effect. If a start command is supplied while the gate closes, the gate will stop and reverse its motion after approx. 2 sec. If a start command is supplied during the pause period, the period will be reset and the automatic closure will start later.

Important : If the gate opening is controlled by a clock the “condominium” mode must be enabled.

“Single wing” mode

This mode is employed with single-wing gates. When enabled, it drives the motor M2 only. The operating modes described above remain unchanged. When the “single-wing” mode is selected the **dip switch 3=ON** must be set.

Note : At the beginning of each opening cycle, with the gate closed, the electric lock can operate in 2 modes :

- 1) If dip switch 4=OFF the electric lock operates a split of second (0,8 sec) before the first wing (M2) starts , and stops operating a split of second (0,4 sec) after the wing's start.
- 2) if dip switch 4=ON the electric lock operates for a short time (approx. 1 sec.) during the wings' closure , and stops operating after that the M2 wing starts the opening. The “**kickback**” procedure is usually employed to help the electric lock's release during bad weather.

In any operation mode, the safety devices causes the following effects :

Stop : If the stop command is enabled no cycles can start and the start command will have no effect. If a stop command is supplied during motion, the gate will immediately stop e interrupt its operating cycle. This condition will continue until the stop command is on. A start command following a stop command always determines an opening cycle. A stop command supplied during the pause period interrupts the operating cycle. A start command subsequently supplied will start a closure cycle.

Photo-cell : This device has effect only during the closure phase or in the pause period. If an obstacle covers the photo-cell during the closure phase , the gate stops and reverses its motion after approx. 2 sec. If an obstacle covers the photo-cell during the pause period this last one is reset and the automatic closure is therefore delayed. .

Photostop : If an obstacle covers the photo-cell during the gate's motion (opening or closure), or during the period preceding the operating cycle's start, then the gate is temporarily stopped, until the obstacle is not removed. The blinker will light with a fixed light to signal the irregular condition. When the obstacle is removed and the photocell is freed, an opening cycle will start. This does not apply when a start command determines the closing phase in step-by-step mode at the end of an opening cycle. If an obstacle covers the photostop during the pause period this last one is reset and the automatic closure is therefore delayed.

Pedestrian start: The pedestrian start command operates in the same way as the other start command, but in this case only the wing fitted with the electric lock (M2) will be opened or closed. The pedestrian start command has no effect during a start cycle and up to the end of the closing phase (closed gate). During a pedestrian start cycle the start command is always active and causes the start of an opening cycle for both wings.

13) Electrical and mechanical specifications

Dimensions and weight : 177 x 247 x 92 mm - 1,2 Kg

Mains power supply : 230 Vac +/- 10%

Stand-by power consumption : approx. 1 W

Operating temperature range : 0 to + 60 °C

Single-phase motors power supply : 230 Vac 1 HP max

Blinker power supply : 230 Vac 40 W max

Courtesy light power supply : 230 Vac 40 W max

Open gate lamp power supply : 230 Vac 40 W max

Electric lock power supply : 12 Vac 15 W max

Accessories power supply : 24 Vac 0.5A max

Motors' work time : programmable, 0 to 250 sec.

Pause time : programmable, 2 to 250 sec.

2nd wing closing delay : programmable, 0 to 25 sec.

Operating frequency : 433,92 MHz

Caution : The unit must be not switched on if the connected loads or the power supply exceed the a.m. limits. Failure to observe this precaution can result in damage to persons, animals or objects for which the manufacturer cannot be held responsible.

14) Electric connections

6 electric connectors are fitted to the card :

- 1) **J2** 8-pole Terminal board for the connection of the devices operating with 230 Vac mains power supply (motors and blinker).
- 2) **J5** 10-pole Terminal board for the connection of the devices operating at low voltage (commands, safety devices, electric lock and 24 Vac power supply output)
- 3) **J4** 4-pole Terminal board for the connection of the auxiliary devices operating with 230 Vac mains power supply (courtesy light, and open gate lamp)
- 4) **J1** 2-pole Terminal board for the connection of the aerial cable
- 5) **J7** 3-pole Terminal board for the connection of the mains power supply and the ground cable
- 6) **J6** 10-pole connector for the optional connection of a radio receiver card

Terminal board J2

Terminal 1 - 230 Vac motor M1 power supply phase (opening)

Terminal 2 - 230 Vac motor M1 power supply phase (closure)

Terminal 3 - 230 Vac motor M1 Power supply common

Note: connect the capacitor of the motor M1 between terminals 2 and 1

Terminal 4 - 230 Vac motor M2 power supply phase (opening)

Terminal 5 - 230 Vac motor M2 power supply phase (closure)

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Terminal 6 - 230 Vac motor M2 Power supply common

Note: connect the capacitor of the motor M2 between terminals 4 and 5

Terminal 7 - 230 Vac blinker power supply phase

Terminal 8 - 230 Vac blinker power supply neutral

Terminal board J5

Terminal 1 – Electric lock 12 Vac power supply (common)

Terminal 2 – Electric lock 12 Vac power supply

Terminal 3 – 24 Vac power supply for photo-cells or other devices (common)

Terminal 4 – 24 Vac power supply for photo-cells or other devices

Terminal 5 – Common Terminal for all electric contacts of commands or security devices

Terminal 6 – Photoelectric cell's normally closed electric contact (photostop)

Terminal 7 – Photo-cell's normally closed electric contact

Terminal 8 – Emergency push-button's normally closed electric contact (stop)

Terminal 9 – Pedestrian start push-button's normally open electric contact

Terminal 10 – Start push-button's normally open electric contact

Important: The normally closed inputs not in use must be fitted with jumpers

Terminal board J4

Terminal 1 – Courtesy light's 230 Vac power supply phase

Terminal 2 – Courtesy light's 230 Vac power supply neutral

Terminal 3 – Open-gate lamp's 230 Vac power supply phase

Terminal 4 – Open-gate lamp's 230 Vac power supply neutral

Terminal board J1

Terminal 1 – Aerial cable connection (signal) for radio receiver card

Terminal 2 – Aerial cable connection (shield) for radio receiver card

Terminal board J7

Terminal 1 – Ground cable connection

Terminal 2 - 230 Vac mains power supply phase

Terminal 3 - 230 Vac mains power supply neutral

Connector J2

Terminal 1 – Normally open electric contact connected to the start

Terminal 2 – Common of the normally open electric contact connected to the start

Terminal 3 – Normally open electric contact connected to the pedestrian start

Terminal 4 – Common of the normally open electric contact connected to the pedestrian start

Terminal 5 - 12 Vdc power supply negative (common)

Terminal 6 - 12 Vdc power supply positive
Terminal 7 - 12 Vdc power supply positive
Terminal 8 - 12 Vdc power supply negative (common)
Terminal 9 – Aerial input (shield)
Terminal 10 – Aerial input (signal)

Connection of the devices

230 Vac mains power supply cable and ground – Terminals 1,2 and 3 on J7

Warning: The cable's ground pole must be connected to a good ground reference in the gate's nearby area.

Motor 1 – Terminals 1, 2 and 3 on J2

Motor 2 – Terminals 4, 5 and 6 on J2

Blinker – Terminals 7 and 8 on J2

Electric lock – Terminals 1 and 2 on J5

Photo-cells power supply – Terminals 3 and 4 on J5

NC photo-cell contact – Terminals 5 and 7 on J5

NC stop push-button – Terminals 5 and 8 on J5

NC photostop contact – Terminals 5 and 6 on J5

NO pedestrian start push-button – Terminals 5 and 9 on J5

NO start push-button – Terminals 5 and 10 on J5

Aerial – Terminals 1 and 2 on J1

Courtesy light– Terminals 1 and 2 on J4

Open gate lamp – Terminals 3 and 4 on J4

Important: Before starting the gate check all connections to the electronic card. Check also the electric contacts' switching, which is signalled by the leds' operation.

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E) MAINTENANCE

Warning : The maintenance of the device must be effected only and exclusively by a specialized technician authorized from the Manufacturer. Any operation of maintenance or control of the device must be effected in absence of power supply.

Ordinary maintenance: Every time that it is necessary and however every 6 months is recommended to verify the device operation.

Extraordinary maintenance: In case of failure, remove the device and send it for repair to the manufacturer laboratory or to authorized laboratory.

The Manufacturer is not responsible for missing observance of rules above described.

F) CONFORMITY DECLARATION (To EMC directive EN45014 and ISO guide 22)

Company name and registered office :

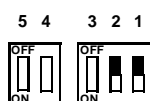
Description of the appliance :	Electronic board for the control of 1 or 2 230 Vac single-phase asynchronous motors for gate automation.
Model :	CTR32
Reference rules applied :	EN 50081-1, EN 50082-1, EN 55014
Basic rules applied :	EN 61000-3-2, EN 61000-3-3, EN 61000-4-4, EN 61000-4-2, ENV 50140
Test laboratory :	Computec
Outcome :	Positive

The manufacturer declares that the above listed products comply to the norms on electromagnetic compatibility provided for by directives 89/336/EEC, 92/31/EEC, 93/68/EEC.

Date , 20-05-2000

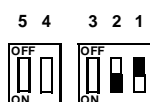
G) Programming the board

Step-by-step logic



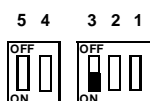
Set the dip switches 1 e 2 to OFF.
The state of the other dip switches has no effect.

Automatic logic



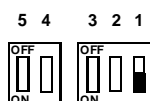
Set the dip switch 1 to OFF.
Set the dip switch 2 to ON.
The state of the other dip switches has no effect.

Single wing logic



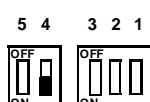
Set the dip switch 3 to ON.
The state of the other dip switches has no effect.

Condominium logic



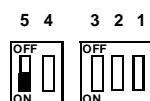
Set the dip switch 1 to ON.
The state of the other dip switches has no effect.

Kickback / extra-push logic



Set the dip switch 4 to ON.
The state of the other dip switches has no effect.

2nd wing delay reset (zero delay)



Set the dip switch 5 to ON.
The state of the other dip switches has no effect.

Radio-command codes self-learning: Press the **P1** key once to insert a “Start” code; press the **P1** push-button twice to insert a “Pedestrian Start” code. Each time the push-button is pressed, the led DL1 flashes in acknowledgement. Subsequent pressures of the **P1** key must be spaced by 1 sec. minimum periods. When the led is lit with a fixed light transmit the code to be learn by means of the radio-command.

Erasing all stored codes: Press push-button P1 until the led DL1 goes off (about 10 seconds).

Setting the work time: Make sure the gate is completely closed. If not, position it manually. Press push-button P2 for about 3 seconds (the led DL1 will light with a fixed light) until the gate starts opening at a reduced speed. During this phase adjust the speed by means of the trimmer RV1 to obtain the desired slow-down. When the gate is completely open press push-button P2 again and wait for the led DL1 and the blinker to go on with a fixed light. **You adjust the RV1 trimmer to half of run** and then press push-button P2 repeatedly (6 times) to program the following operations :

- 1) motor M1 start
- 2) motor M2 start (delayed)
- 3) motor M1 slow-down start
- 4) motor M2 slow-down start
- 5) motor M1 stop (end of travel)
- 6) motor M2 stop (end of travel and end of programming)

Setting the pause time: Press push-button **P3** until the led DL1 lights. Let the desired pause time pass, then press push-button **P3** again.

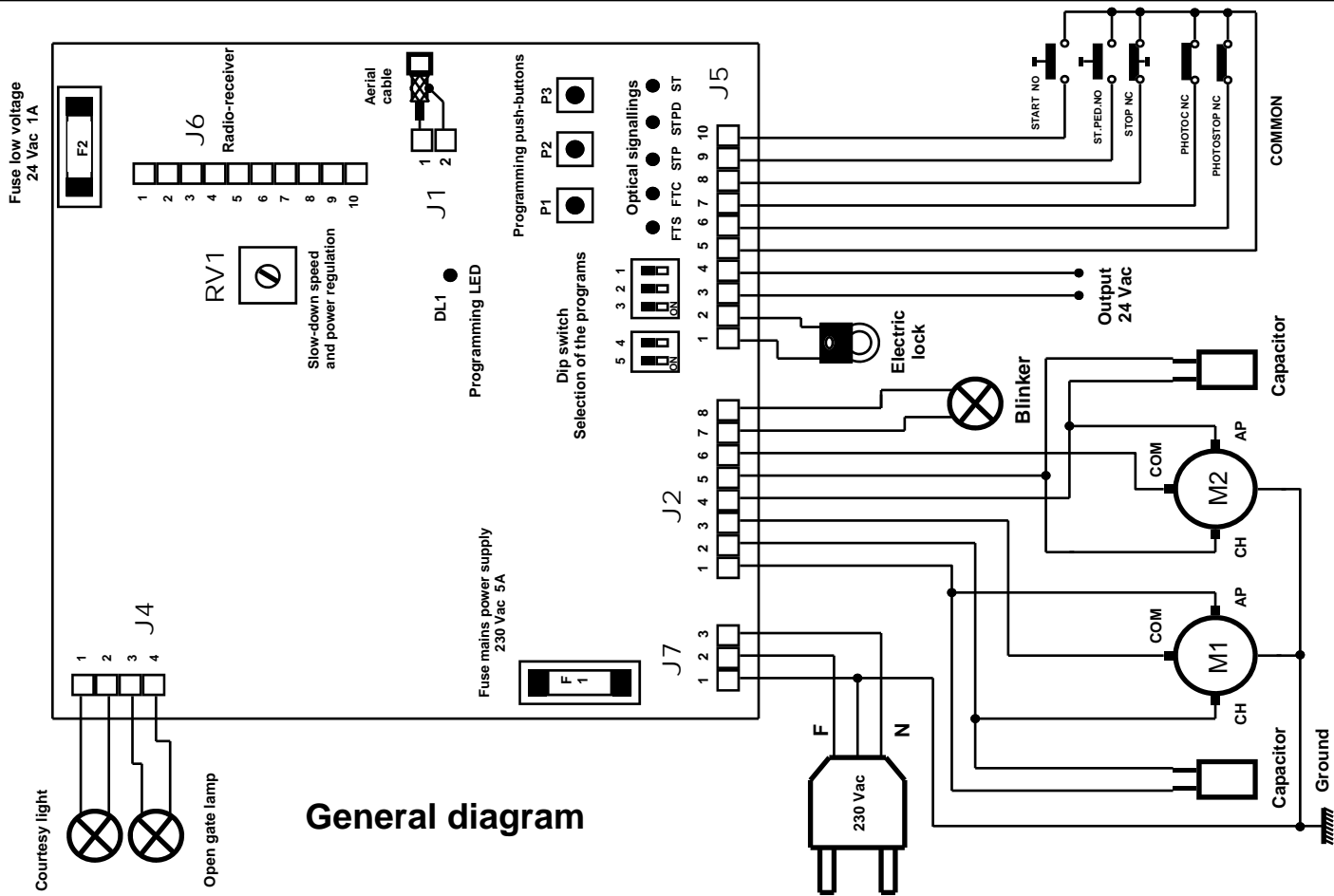


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