*user manual*

# QK-CE220BATRL4
## CONTROL BOARD FOR 1/2 230V MOTORS

IMPORTANT NOTICE:
This user manual can be used also for the same version of control board for 110V motors. Item code of the board becomes **QK-CE110BATRL4** and:
- all 230/220V within this manual to be read as 110V
- F1 fuse is 10A. F2 and F3 are 4A
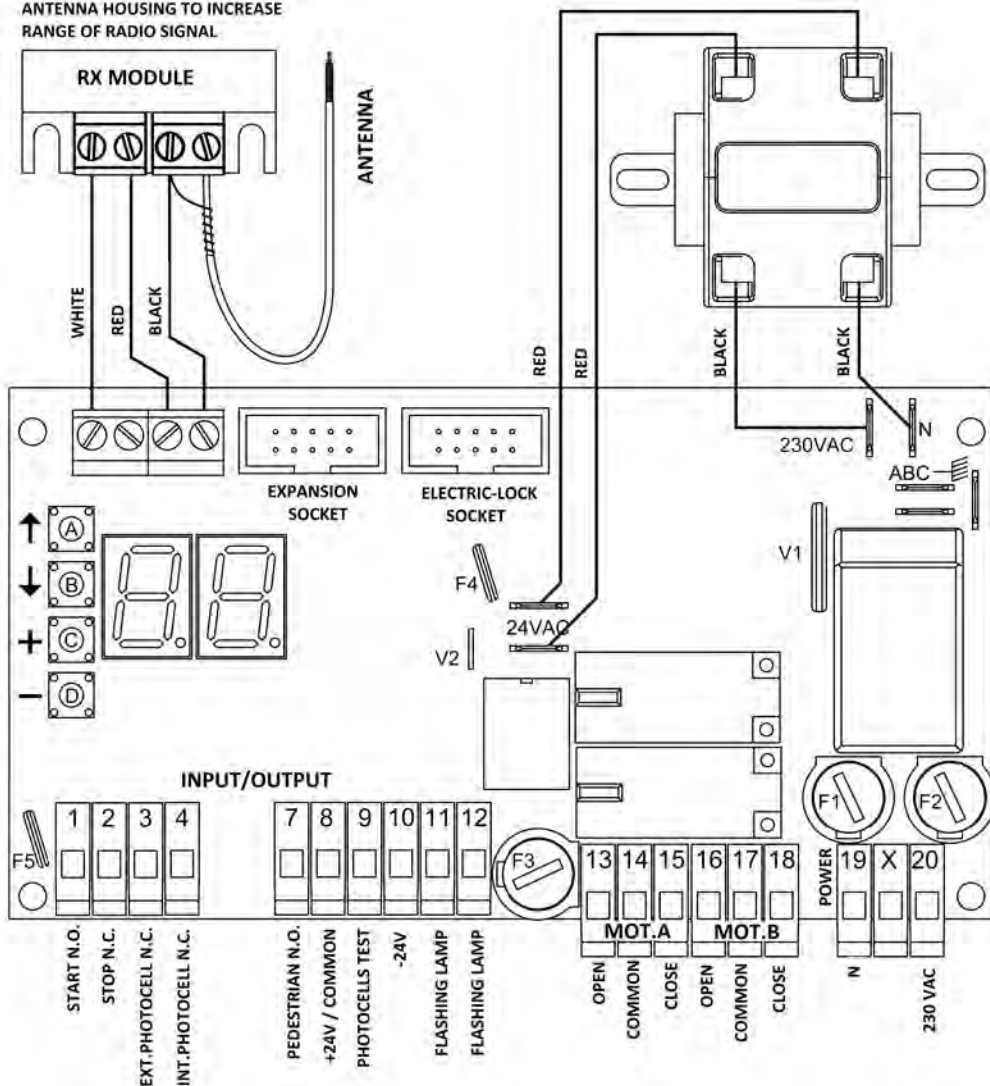- QK-CE110BATRL4 control board is equipped with a 110V transformer



**230V**

433,92 MHz

PLUG & PLAY

99 TX
MEMORY

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# BOARD LAYOUT
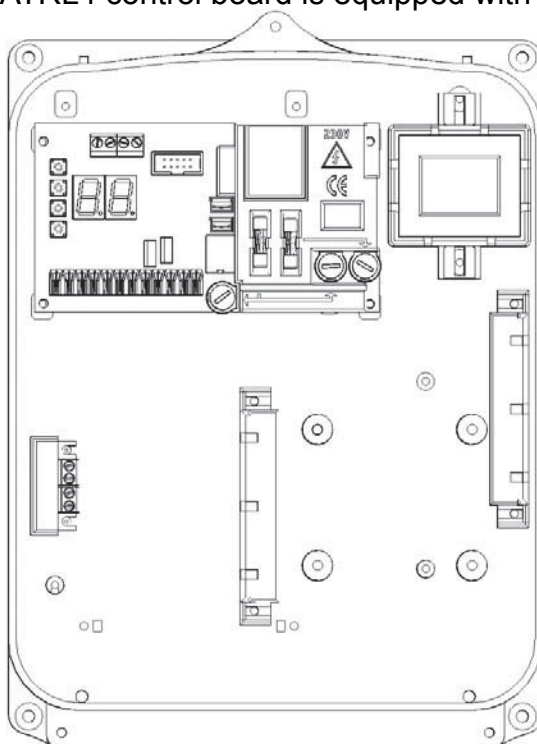
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PUT INSIDE FLASHING LAMP OR ANTENNA HOUSING TO INCREASE RANGE OF RADIO SIGNAL

RX MODULE

ANTENNA

WHITE RED BLACK

RED RED BLACK BLACK

230VAC N

EXPANSION SOCKET

ELECTRIC-LOCK SOCKET

ABC

F4

24VAC

V2

V1

F1 F2

POWER

INPUT/OUTPUT

F5

| 1 | 2 | 3 | 4 | | 7 | 8 | 9 | 10 | 11 | 12 | | 13 | 14 | 15 | 16 | 17 | 18 | | 19 | X | 20 |

F3

MOT.A  MOT.B

START N.O. | STOP N.C. | EXT.PHOTOCELL N.C. | INT.PHOTOCELL N.C. | PEDESTRIAN N.O. | +24V / COMMON | PHOTOCELLS TEST | -24V | FLASHING LAMP | FLASHING LAMP | OPEN | COMMON | CLOSE | OPEN | COMMON | CLOSE | N | 230 VAC

## BOARD'S COMPONENTS

| A | Button A |
|---|---|
| B | Button B |
| C | Button C |
| D | Button D |
| F1 | 250 VAC power fuse 5A |
| F2 | Motor B protection fuse 2A |
| F3 | Motor A protection fuse 2A |
| F4 | Resettable fuse 24V 1.6 A |
| F5 | Resettable fuse 24V 0.6 A |
| A B C | Ground terminals |
| CN | Electric-lock socket |
| V1 | Primary varistor |
| V2 | Secondary varistor |
| 1 to 20 | Terminal block pins |

## IMPORTANT

### RESETTABLE FUSE

**AFTER SHORT-CIRCUIT**
Turn off the control board. Remove the short-circuit. Wait for 60 seconds or more. Turn on the control board.

F4/F5

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## INPUTS CONNECTION

| EXTERNAL ( CLOSING ) PHOTOCELL | 24VDC POWER SUPPLY | | TYPE | PIN | | CONFIG. PARAMETER |
|---|---|---|---|---|---|---|
| TRANSMITTER | 8 + | 10 - | N.C. | X | X | E3 |
| RECEIVER | | | | 3 | 8 | |

| INTERNAL ( OPENING ) PHOTOCELL | 24VDC POWER SUPPLY | | TYPE | PIN | | CONFIG. PARAMETER |
|---|---|---|---|---|---|---|
| TRANSMITTER | 8 + | 10 - | N.C. | X | X | E4 |
| RECEIVER | | | | 4 | 8 | |

| OTHER INPUTS | TYPE | PIN | | CONFIG. PARAMETER |
|---|---|---|---|---|
| START – OPEN ONLY – CLOSE ONLY - .... | N.O. | 1 | 8 | E1 |
| PEDESTRIAN – OPEN ONLY – CLOSE ONLY - .... | N.O. | 7 | 8 | E7 |
| STOP - ... | N.C. | 2 | 8 | E2 |

*N.C. Normally Closed*
*N.O. Normally Open*

| 230 VAC POWER SUPPLY PINS | |
|---|---|
| 19 | 20 |

## OUTPUTS CONNECTION

| MOTORS | OPEN PIN | COM. PIN | CLOSE PIN |
|---|---|---|---|
| Motor A | 13 | 14 | 15 |
| Motor B | 16 | 17 | 18 |

| 24V FLASHING LAMP (20W) PINS | |
|---|---|
| 11 | 12 |

| 24VDC (400 mA) PINS | |
|---|---|
| 8 + | 10 - |

**QK-ELOCKM** → Optional module for 12V electric lock

**QK-SMARTM** → Optional module for external relays

SET
LO = SI

QK-SMARTM

QK-ELOCKM
*12V ELETRIC LOCK*

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## Motor A Setting

| DISPLAY | DEFAULT | ● C MAX | ● D MIN | DESCRIPTION |
|---|---|---|---|---|
| A1 | 14 sec | 99 sec | 00 sec | Standard working time |
| A2 | 7 sec | 99 sec | 00 sec | Slowdown working time |
| A3 | 0.8 sec | 1.5 sec | 0.1 sec | Start up time (cue time) |
| A4 | 6 sec | 99 sec | 0 sec | Displacement time on closure |
| A5 | 6 | 10 | 1 | Standard force |
| A6 | 8 | 10 | 1 | Slowdown force |
| A7 | NO (DISABLED) | 99 - NO | 0 | Standard obstacle detection threshold. During opening, for standard working time, the display shows motor A stress. |
| A8 | NO (DISABLED) | 99 - NO | 0 | Slowdown obstacle detection threshold. During opening, for slowdown working time, the display shows motor A stress. |

## Motor B Setting

| DISPLAY | DEFAULT | ● C MAX | ● D MIN | DESCRIPTION |
|---|---|---|---|---|
| b1 | 14 sec | 99 sec | 00 sec | Standard working time |
| b2 | 7 sec | 99 sec | 00 sec | Slowdown working time |
| b3 | 0.8 sec | 1.5 sec | 0.1 sec | Start up time (cue time) |
| b4 | 3 sec | 99 sec | 0 sec | Displacement time on opening |
| b5 | 6 | 10 | 1 | Standard force |
| b6 | 8 | 10 | 1 | Slowdown force |
| b7 | NO (DISABLED) | 99 - NO | 0 | Standard obstacle detection threshold. During closing, for standard working time, the display shows motor B stress. |
| b8 | NO (DISABLED) | 99 - NO | 0 | Slowdown obstacle detection threshold. During closing, for slowdown working time, the display shows motor B stress. |

## General Functions

| DISPLAY | DEFAULT | ● C MAX | ● D MIN | DESCRIPTION |
|---|---|---|---|---|
| F0 | 10 sec | 99 sec | 00 sec | Automatic Closure Time. To disable hold down ● C button until display shows 5t. |
| F1 | 07 sec | A1 sec | 00 sec | Pedestrian time. |
| F2 | 0 sec | 2.5 sec | 0.0 sec | Kick back function during closing. It can be useful when an electric-lock is installed. |
| F3 | 0.0 sec | 4.0 sec | 00 sec | Pre-blinking time |
| F4 | NO (OFF) | SI (ON) | NO (OFF) | Kick back function during opening. It can be useful when an electric-lock is installed. |
| F5 | NO (OFF) | SI (ON) | SI (OFF) | Step-by-step function |
| F6 | NO (OFF) | SI (ON) | NO (OFF) | Community mode |
| F8 | SI | SI | NO | Photocells logic: SI →Standard logic / no →Reverse logic |
| L0 | NO (OFF) | SI (ON) | NO (OFF) | Electric-lock |
| L1 | 00 | 00 min | 10 min | Cold winter function. This function is useful in countries where the winter is extremely cold. |
| L3 | no | SI | NO | Single Leaf Mode. Motor A works only. |
| L5 | no | E.9 | A.1 | Assistance request from cycle counter. |
| L6 | X | G.9 | A.0 | Total working cycles counter |
| t1 | NO (OFF) | SI (ON) | NO (OFF) | Photocells test |
| t2 | SI (ON) | SI (ON) | NO (OFF) | Motors thermal protection test |

## Courtesy Functions

| DISPLAY | DISPLAY | ● C | DESCRIPTION |
|---|---|---|---|
| d0 | no | Set Up | To restore default setting hold down ● C button until display shows - - |
| P2 | - - | X | When a start command is received the control board starts an automatic procedure to acquire the gate working times. |

## Radio Functions

| DISPLAY | ● C | | DESCRIPTION |
|---|---|---|---|
| r0 | 1…2… | Delete | To erase a remote control: Hold down ● C button on the selected code until the display turns off |
| r1, r2, r3, r4 | -.- | Save | To save a remote control key: Hold down a remote key. When the display shows -.-, push down ● C button on the control board. r1 → Start, r2 → Stop, r3 → Pedestrian start, r4 → Fast closure start |
| r5 | no | Delete | To erase all codes: Hold down ● C button until display stops flashing SI |
| r6, r7, r8 | -.- | Save | Programmable radio functions. Save a remote as one of following functions: Only Open oP, Only Close CL, open Dead Man Po, close Dead Man PC, electric lock EL. |

## Terminal Block Settings

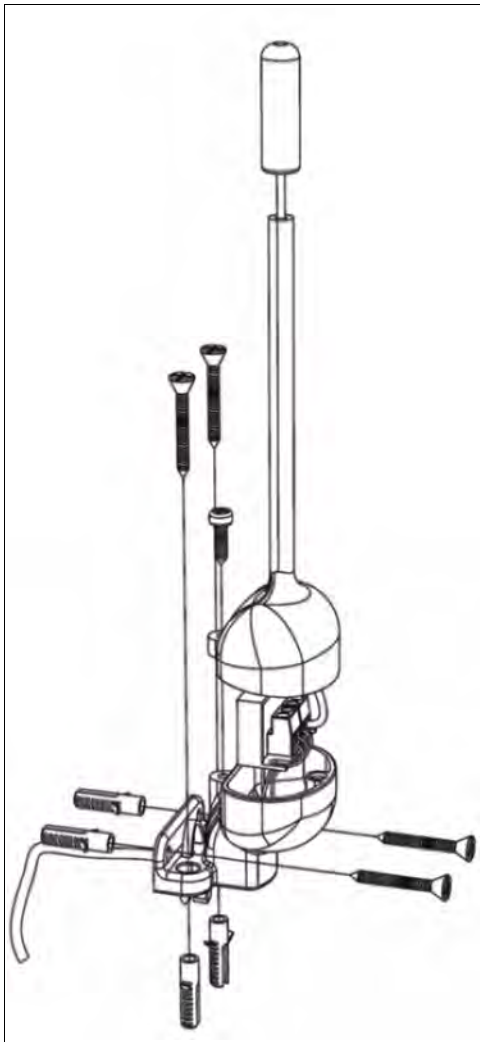| DISPLAY | ● C | ● D | DESCRIPTION |
|---|---|---|---|
| E1 | ↓ | ↑ | no = Disabled. **Go = Start N.O.** oP = Open only N.O. CL = Close only N.O. Po = Dead man Open N.O. PC = Dead man Close N.O. Eo = QK-SMARTM command N.O. EL = Electric lock command N.O. |
| E2 | ↓ | ↑ | **no = Disabled.** 5t = Stop N.C. A = Motor A opening and closing limit switch N.O. |
| E3 | ↓ | ↑ | **no = Disabled.** tC = External photocell N.C. td = same like tC but with possibility to start the opening even if external photocell is detecting an obstacle. |
| E4 | ↓ | ↑ | **no = Disabled.** tA = Internal photocell N.C. b = Motor B opening and closing limit switch N.O. |
| E7 | ↓ | ↑ | no = Disabled. **PE = Pedestrian N.O.** oP = Open only N.O. CL = Close only N.O. Po = Dead man Open N.O. PC = Dead man Close N.O. Eo = QK-SMARTM command N.O. EL = Electric lock command N.O. |

## Display Reports

| | |
|---|---|
| 5t | Stop |
| FH | External photocell + Internal photocell |
| tA | Internal photocell |
| tC | External photocell |
| td | External photocell |
| Go | Start |
| PE | Pedestrian start |
| oP | Open Only. |
| CL | Close Only. |
| Po | Dead man Open |
| PC | Dead man Close |
| EL | Electric-lock command |
| Eo | QK-SMARTM command N.O. |
| A | Motor A opening or closing limit switch . |
| b | Motor B opening or closing limit switch. |
| Ab | Motor A and Motor B opening or closing limit switches. |
| -.- | Remote key is pressed |
| 5L | Assistance request from cycle counter. |
| 0t | Board damaged by over-voltage. |
| 1t | Photocells test error |
| 7A | Motor A has detected an obstacle |
| 9A | Motor A is in thermal protection state |
| 7b | Motor B has detected an obstacle |
| 9b | Motor B is in thermal protection state |
| FF | The radio memory is full |

## BUTTONS

| | |
|---|---|
| ● A | Scrolls menu from A1 to P2 |
| ● B | Scrolls menu from P2 to A1 |
| ● C | Increases value or set SI (means: ON or ENABLED). |
| ● D | Decreases value or set no (means: OFF or DISABLED). |

**Internal (Opening) photocells**
Wire to terminal block input 4

**INTERNAL OF THE PROPERTY**

**Motor A** *(opens first)*

**Motor B**

**Antenna**

**Flashing lamp**

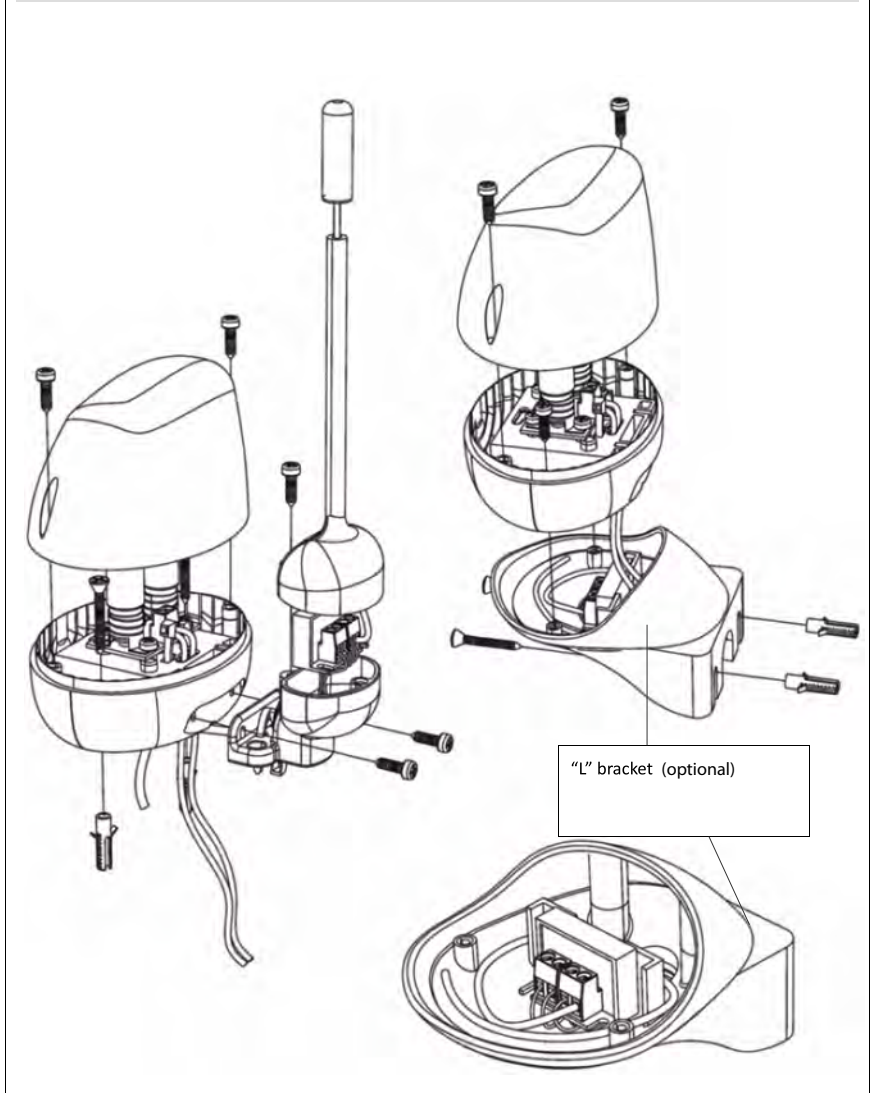**External (Closing) photocells**
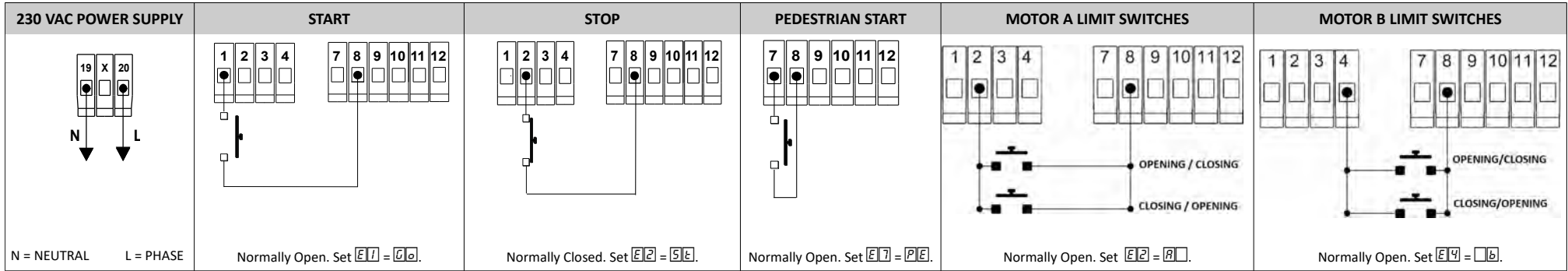Wire to terminal block input 3
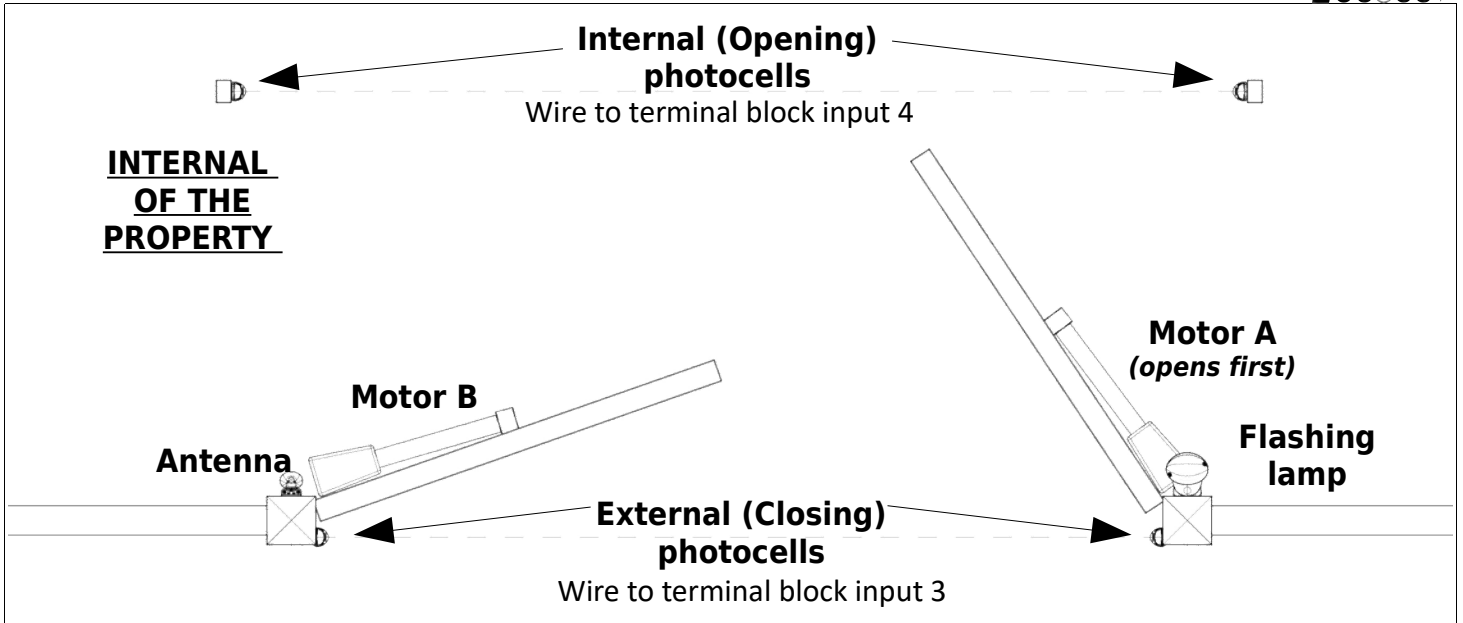
**INSTALLING RADIO MODULE**
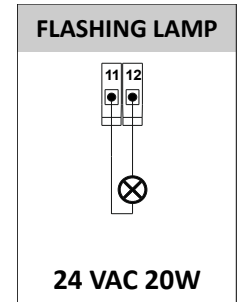
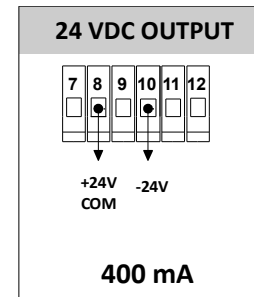| INSIDE THE ANTENNA HOUSING *OPTIONAL QK-AN433_V4* | INSIDE THE FLASHING LAMP |
|---|---|

"L" bracket (optional)

| 230 VAC POWER SUPPLY | START | STOP | PEDESTRIAN START | MOTOR A LIMIT SWITCHES | MOTOR B LIMIT SWITCHES |
|---|---|---|---|---|---|



N = NEUTRAL    L = PHASE

Normally Open. Set $E1 = Go$.

Normally Closed. Set $E2 = St$.

Normally Open. Set $E7 = PE$.

Normally Open. Set $E2 = A$.

Normally Open. Set $E4 = b$.

OPENING / CLOSING
CLOSING / OPENING

OPENING/CLOSING
CLOSING/OPENING

| | INTERNAL (OPENING) PHOTOCELL | EXTERNAL (CLOSING) PHOTOCELL |
|---|---|---|
| PHOTOCELLS RECEIVER | N.C.  +24V COM  -24V | N.C.  +24V COM  -24V |
| (4.A) PHOTOCELLS TRANSMITTER WITHOUT PHOTO TEST FUNCTION | +24V COM  -24V | +24V COM  -24V |
| (4.B) PHOTOCELLS TRANSMITTER WITH PHOTO TEST FUNCTION | +24V COM  -24V | +24V COM  -24V |
| (4.C) DISABLED BY HARDWARE | JUNCTION | JUNCTION |
| (4.D) DISABLED BY SOFTWARE | Set $E4$ to $no$ | Set $E3$ to $no$ |
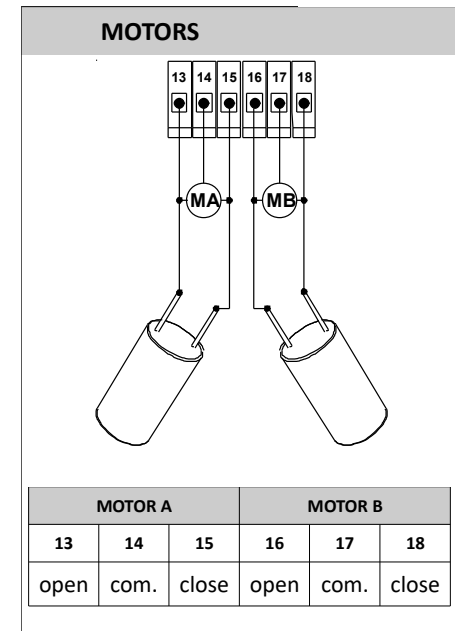
The parameter $t1$ enables ($S1$) or disables ($no$) the test of photocells. Settings **(4.A)** and **(4.C)** require $t1$ set to $no$.

**24 VDC OUTPUT**

+24V COM    -24V

**400 mA**

**FLASHING LAMP**

**24 VAC 20W**

**MOTORS**

MA    MB

| MOTOR A | | | MOTOR B | | |
|---|---|---|---|---|---|
| 13 | 14 | 15 | 16 | 17 | 18 |
| open | com. | close | open | com. | close |

| Stand By | The gate is completely closed and the safety devices are unactivated. The control board is ready to start a working cycle. In this state the flashing lamp is off. |
|---|---|
| Opening | The gate is opening and the flashing lamp blinks quickly. |
| Pause | When the opening is finished the motors are stopped and the flashing lamp is on. After pause time has expired ($F0$) the gate starts closing. |
| closing | The gate is closing and the flashing lamp blinks slowly. |
| Stop opening | The gate has been stopped while it was opening. A new start command begins the closing phase. In this state the flashing lamp is off. |
| Stop closing | The gate has been stopped while it was closing. A new start command begins the opening phase. In this state the flashing lamp is off. |
| Types of Input | There are two types of input: external and remote control. The external inputs are all devices (photocells, normally closed contacts and normally open contacts) wired to the terminal blocks. Each input is programmable with a function. The **safety functions** match the normally closed contacts. The other functions match the normally open contacts. The **safety functions** are: **stop**, **internal photocell** and **external photocell**. The other functions are: **start, pedestrian start, motor A limit switches** and **motor B limit switches**. The functions of terminal block inputs are configurable by parameters $E1$, $E2$, $E3$, $E4$, $E7$. A remote control input is programmable as: **start, stop, pedestrian start** and **fast closure start**. The remote controls are configurable by parameters $r1$, $r2$, $r3$, $r4$. The control board doesn't distinguish between the type of input but only between the functions. |
| Input Is activated | An input is activated when its state changes from the standard state. For instance, a photocell is activated when the beam from the transmitter to the receiver is interrupted. While a generic push-button or a remote key is activated only when it is pushed down. All these actions are recognized by the control board which shows these changes on the display. When more inputs are activated at the same time the display shows only the most important input. The order from the most important to the least important input is: **stop** $St$, **internal and external photocells** $FH$, **external photocells** $tC$ or $td$, **internal photocells** $tA$, **start** $Go$, **pedestrian start** $PE$, **open** $oP$, **close** $CL$ , **Motor A and Motor B limit switches** $Ab$, **motor A limit switch** $A$, **motor B limit switch** $b$. |
| Start commands | The **start commands** are: **start, pedestrian start, open** and **fast closure start**. They are able to start a working cycle. The function of start commands depend on $F5$ and $F6$ parameters programming. To know more see $F5$ and $F6$ description. To know how the fast closure start command works see $r4$ description. To know how the start command works see **Standard Working Cycle**. To know how the pedestrian start command works see **Pedestrian Working Cycle**. |
| Safety commands | The **safety commands** are: **stop, internal photocell** and **external photocell**. The stop command always stops the gate. The functions of photocells depend on $F8$ parameter programming. To know more see $F8$ description. |
| Standard working cycle | A **standard working cycle** begins when an input programmed as **start**, **open** or **fast closure** is activated and the control board is in **stand by**. **Motor A** starts opening before **Motor B**. $b4$ seconds later, **Motor B** stars opening. After the **automatic closure time** $F0$, **Motor B** starts closing. $A4$ seconds later, Motor A starts closing. When a **standard working cycle** is in progress, the **pedestrian start** inputs work as a **start**. The **working cycle** finishes when the control board returns to **stand by**. This functionality can be handled by parameters $F0$, $F5$, $F6$. |

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| | |
|---|---|
| **Standard Working Time** `A1` | Motor A opens before motor B. Motor A works for `A1` seconds. After this time motor A starts the slowdown for `A2` seconds. This is for both phases: opening and closing. To disable Motor A slowdown set `A2` to `00`. `A1` is settable from **00** to **99** seconds. |
| **Slowdown Working Time** `A2` | `A2` is settable from **0.0** to **99** seconds. |
| **Start Up Time** (Cue time) `A3` | `A3` is the start up time of motor A. During this time the force of the motor increases constantly until it reaches the maximum power and the obstacle detection sensor is disabled. Each time the motor starts, the first `A3` seconds are the start up time. `A3` is settable from **0.1** to **1.5** seconds. |
| **Displacement Time On Closure** `A4` | Motor B begins closing `A4` seconds before motor A. This parameter is useful to avoid leaf overlap during the closing. `A4` is settable from **00** to **99** seconds. |
| **Standard Force** `A5` | `A5` is the force of motor A during the **standard working time** `A1`. `A5` is settable from **00** to **10** |
| **Slowdown Force** `A6` | `A6` is the force of motor A during the **slowdown working time** `A2`. `A6` is settable from **00** to **10** |
| **Standard Obstacle Detection Threshold** `A7` | During the **standard working time** `A1`, when motor A stress is higher than `A7`:<br>• If the **slowdown obstacle detection threshold** `A8` and the **slowdown working time** `A2` are enabled then motor A inverts its movement while the motor B stays off. If motor A was closing, it opens completely. If motor A was opening, it closes for 2 seconds then it stops. Until the control boards returns to **stand by**: During the opening motor B starts moving only when motor A finishes its run. During the closing motor A starts moving only when motor B finishes its run. This functionality is active once per **working cycle**. If an obstacle is detected more than once: motor A finishes its run.<br>• If the **slowdown obstacle detection threshold** `A8` or the **slowdown working time** `A2` are disabled motor A finishes its run.<br>During the opening, for the **standard working time** `A1`, the display shows motor A stress. **00** is the minimum, **99** is the maximum. The maximum value depends on the motor and can be lower than **99.** To disable the obstacle detection sensor during the **standard working time** `A1` set `A7` = `no`. To set `A7` = `no` hold down or keep pressing button C. `A7` is settable from **00** to **99**. After **99** the display shows `no`. |
| **Slowdown Obstacle Detection Threshold** `A8` | During the **slowdown working time** `A2`, when the motor A stress is higher than `A8`:<br>• Motor A finishes its run<br>During the opening, for the **slowdown working time** `A2`, the display shows motor A stress. **00** is the minimum, **99** is the maximum. The maximum value depends on the motor and can be lower than **99.** To disable the obstacle detection sensor during the **slowdown working time** `A2` set `A8` = `no`. To set `A8`= `no` hold down or keep pressing button C. `A8` is settable from **00** to **99**. After **99** the display shows `no`. |

| | |
|---|---|
| **Standard Working Time** $b1$ | Motor B opens after motor A. Motor B works for $b1$ seconds. After this time motor B starts the slowdown for $b2$ seconds. This is for both phases: opening and closing. To disable Motor B slowdown, the parameter $b2$ must be set to 00. $b1$ is settable from **00** to **99** seconds. $b2$ is settable from **0.0** to **99** seconds. |
| **Slowdown Working Time** $b2$ | |
| **Start Up Time** (Cue time) $b3$ | $b3$ is the start up time of motor B. During this time the force of the motor increases constantly until it reaches the maximum power and the obstacle detection sensor is disabled. Each time the motor starts, the first $b3$ seconds are the start up time. $b3$ is settable from **0.1** to **1.5** seconds. |
| **Displacement Time On opening** $b4$ | Motor A begins opening $b4$ seconds before motor B. This parameter is useful to avoid leaf overlap during the closing. $b4$ is settable from **00** to **99** seconds. |
| **Standard Force** $b5$ | $b5$ is the force of motor B during the **standard working time** $b1$. $b5$ is settable from **00** to **10** |
| **Slowdown Force** $b6$ | $b6$ is the force of motor B during the **slowdown working** time $b2$. $b6$ is settable from **00** to **10** |
| **Standard Obstacle Detection Threshold** $b7$ | During the **standard working time** $b1$, when motor B stress is higher than $b7$: <br> • If the **slowdown obstacle detection threshold** $b8$ and the **slowdown working time** $b2$ are enabled then motor B inverts its movement while the motor A stays off. If motor B was closing, it opens completely. If motor B was opening, it closes for 2 seconds then it stops. Until the control boards returns to **stand by**: During the opening motor B starts moving only when motor A finishes its run. During the closing motor A starts moving only when motor B finishes its run. This functionality is active once per **working cycle**. If an obstacle is detected more than once: motor B finishes its run. <br> • If the **slowdown obstacle detection threshold** $b8$ or the **slowdown working time** $b2$ are disabled motor B finishes its run. <br> During the closing, for the **standard working time** $b1$, the display shows motor B stress. **00** is the minimum, **99** is the maximum. The maximum value depends on the motor and can be lower than **99**. To disable the obstacle detection sensor during the **standard working time** $b1$ set $b7$ = $no$. To set $b7$ = $no$ hold down or keep pressing button C. $b7$ is settable from **00** to **99**. After **99** the display shows $no$. |
| **Slowdown Obstacle Detection Threshold** $b8$ | During the **slowdown working time** $b2$, when the motor B stress is higher than $b8$: <br> • Motor B finishes its run <br> During the closing, for the **slowdown working time** $b2$, the display shows motor B stress. **00** is the minimum, **99** is the maximum. The maximum value depends on the motor and can be lower than **99.** To disable the obstacle detection sensor during the **slowdown working time** $b2$ set $b8$ = $no$. To set $b8$ = $no$ hold down or keep pressing button C. $b8$ is settable from **00** to **99**. After **99** the display shows $no$. |

| | |
|---|---|
| **Automatic Closure Time**<br><br>$F0$ | After the opening the gate waits for $F0$ seconds before beginning the closing. To disable the automatic closure set $F0 = 5t$. To set $5t$ hold down or keep pressing button C until the display shows $5t$.<br>When $F0 = 5t$ the gate stops after the opening. The closing begins when a **start command** is received. |
| **Pedestrian time**<br><br>$F1$ | A pedestrian command opens leaf A for $F1$ seconds.<br>$F1$ is settable from 00 to $A1$ seconds. |
| **Kick Back Function During Closing**<br><br>$F2$ | When the gate is closing and the slowdown is finished, a ramp pulse is executed by motor A. This pulse is $F2$ seconds long and the obstacle detection sensor is disabled for the same amount of time. After the pulse the closing phase is finished. $F2$ is settable from 0.0 to 2.5 seconds |
| **Pre-blinking Time**<br><br>$F3$ | Before starting the motors, the flashing lamp blinks for $F3$ seconds. After this time the flashing lamp still blinks and the motors start moving. $F3$ is settable from 0.0 to 4.0 seconds |
| **Kick Back Function During Opening**<br><br>$F4$ | $F4 = 5I$ → ENABLED          $F4 = no$ → DISABLED<br>Before opening motor A closes for 0.5 seconds. The force of motor A is set to maximum power and the obstacle detection is disabled. This function can be useful when the electric lock is installed and opening is difficult. |

| **Start Commands Functionality**<br><br>$F5$<br><br>$F6$ | **STANDARD SETTING**<br>$F6 = no$ and $F5 = no$<br>**During the opening:** The start commands stop the opening.<br>**During the closing:** The start commands stop the closing and begin the opening. | **COMMUNITY MODE**<br>$F6 = 5I$<br>**During the opening:** The start commands don't have any effect.<br>**During the closing:** The start commands stop the closing and begin the opening. | **STEP-BY-STEP SETTING**<br>$F6 = no$ and $F5 = 5I$<br>**During the opening:** The start commands stop the gate.<br>**During the closing:** The start commands stop the gate. |
|---|---|---|---|

| **Photocells Logic**<br><br><br>$F8$ | $F8 = 5I$ →     **STANDARD MODE**<br>*During the opening:* While the **internal(opening) photocell** is activated the control board stops the opening. When the **internal photocell** is deactivated the control board continues the opening. The activation of the **external(closing) photocell** doesn't have any effect instead.<br>*During the closing:* If the **external (closing) photocell** is activated the control board stops the closing and starts the opening. If the **internal(opening) photocell** is activated the control board stops the closing and waits for the opening. The opening starts only when the **internal photocell** is deactivated. | $F8 = no$ →     **REVERSE MODE**<br>*During the opening*: if the **internal (opening) photocell** is activated the control board stops the opening and starts the closing. After 3 seconds the closure is stopped and the control board state is stop-opening. The activation of the **external (closing) photocell** doesn't have any effect Instead.<br>*During the closing:* If the **external (closing) photocell** is activated the control board stops the closing and starts the opening. The activation of the **internal photocell** doesn't have any effect instead. |
|---|---|---|
| | **Before the gate starts the opening phase:**<br>if $E3 = tC$ : The opening <u>cannot be started</u> if **external photocell** is detecting an obstacle.  ← SAFER SETTING<br>if $E3 = td$ : The opening <u>can be started</u> even if **external photocell** is detecting an obstacle. | |

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| **Electric Lock**<br><br>$L0$ | $L0 = 5I$ → ENABLED       $L0 = no$ → DISABLED<br>When enabled the electric-lock module is managed. The module must be installed on the electric-lock socket. |
| **Cold Winter**<br><br>$L1$ | The **cold winter** function is useful in countries with very cold winters. The motors are activated with the minimum power for $L1$ minutes out of 10 minutes to keep the control board box and the motors warm. When the motors are activated with the minimum power, the gate doesn't move. The function runs when the gate is completely open or in stand-by only. When $L1$ is set to **00** the function is disabled. $L1$ is settable from **00** to **10.** |
| **Single Leaf Mode**<br><br>$L3$ | $L3 = 5I$ → ENABLED           $L3 = no$ → DISABLED<br>Enable $L3$ for single leaf gate installations: motor A works only. |
| **Assistance Request from cycle counter**<br><br>$L5$ | $L5 = no$ → DISABLED<br>When the gate has completed $L5$ working cycles, the display shows $5L$. Each 20 minutes the flashing lamp is on for 1 minutes. This function is useful for programming assistance request. $L5$ is programmable from $A.1$ to $G.9$. The letter is the multiplier of the number **A(x1)** , **B (x10)** , **C (x 100)** , **D (x 1 000)**, **E (x 10 000)** , **F (x 100 000)** and **G (x 1 000 000)**. In this way you can program **assistance request function** from: 1-9 ($A$), 10-90($b$) , 100 – 900 ($C$) , 1000 – 9000 ($d$) , 10 000 – 90 000 ($E$) , 100 000 – 900 000 ($F$) , 1 000 000 – 9 000 000 ($G$) working cycles. |

| **Working Cycle Counter**<br><br>$L6$ | It is the total working cycle counter. The display shows a letter and a number. The letter is the multiplier of the number: **A(x1)**, **B (x10)**, **C(x100)**, **D(x1 000)**, **E(x10 000)**, **F (x 100 000)** and **G (x 1 000 000)**. **For instance** if a gate has completed 1365 working cycle then $L6$ shows $d.1$. Pressing button D the display shows the complete value: |
|---|---|
| | |

| $d.1$ | $C.3$ | $b.6$ | $A.5$ |
|---|---|---|---|
| **1** | **3** | **6** | **5** |

| | |
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| **Erasing a remote key**<br><br>`r0` | Keep pressing A or B button until the display shows `r0`. After a few seconds the control board starts scanning for saved codes. Each code showed is a remote key identification number previously saved. To erase a displayed code, hold down button C until display turns off. |
| **Saving a remote key**<br><br><br>`r1` START<br><br>`r2` STOP<br><br>`r3` PEDESTRIAN<br><br>`r4` FAST CLOSURE | A remote key is configurable as: start `r1`, stop `r2`, pedestrian `r3` or fast closure `r4`. Hold down or keep pressing A or B button on the control board until the display shows the chosen function `r1`, `r2`, `r3` or `r4`. After about one second, the display shows `-.-`. Hold down an unsaved remote key. The display shows `-.-`. To save push down the button C on the control board. After saving, the display shows the remote key identification number. The control board holds up to 99 codes. If the memory is full, the display shows `FF` when trying to save the remote key.<br><br>• `r1` **Start**<br>The **start function** begins a **Standard Working Cycle** : Motor A starts opening before Motor B. `b4` seconds later, Motor B starts opening. After the pause `F0`, Motor B starts closing. `A4` seconds later, Motor A starts closing.<br><br>• `r2` **Stop**<br>The **stop function** stops the gate.<br><br>• `r3` **Pedestrian**<br>The **pedestrian** function begins a **Pedestrian Working Cycle**: Motor **A** works normally while Motor **B** stays off.<br><br>• `r4` **Fast closure**<br>*During the opening*: once all photocells have been activated, both internal and external, the gate starts closing after 5 seconds.<br>*During the pause time* `F0`: once all photocells have been activated, both internal and external, the gate starts closing.<br>*Required settings* :<br>**(1)**. Both Internal and external photocells must be installed.<br>**(2)**. The parameter `E4` must be set to `tA`.<br>**(3)**. The parameter `E3` must be set to `tC`.<br>If these requirements are not fulfilled, the remote key memorized as `r4` operates as a standard start signal(`r1`). This function is active once per working cycle. |
| **Erasing all remote controls**<br><br>`r5` | Keep pressing A or B button until the display shows `r5`. After a few seconds the control board shows `no`. To erase all saved codes, hold down button C until the display stops flashing `Sì` (YES). |
| **Programmable radio functions**<br><br>`r6`<br>`r7`<br>`r8` | The programmable radio functions are: **open only** `oP`, **close only** `CL`, **dead man open** `Po`, **dead man close** `PC` , and `EL` **electric-lock** . **To save** see SAVING A REMOTE KEY.<br>**To set a function** select `r6` or `r7` or `r8` by pressing button A or B. Hold down button D. The display blinks showing `r6` or `r7` or `r8`. When the display stop blinking release button D. Selecting the function using buttons C or D.  The<br>`oP` **OPEN**  opens the gate.<br>`CL` **CLOSE** closes the gate.<br>`Po`/`PC` **DEAD MAN** opens/closes the gate even when the safety input contacts are open( **I.E**. stop input). The **dead man** functions work while the button of the remote is press only.<br>`EL` **ELECTRIC LOCK** activates the electric-lock module by means of remote key. For instance, It may be useful when you want to unlock an electric-lock installed on a pedestrian gate beside the electric gate. (Available on the terminal block inputs, too). |

## SAVING A REMOTE FROM A DISTANCE

You can add a remote key to the control board memory without opening the protective housing. You need a remote previously stored. **Proceed as follows**:

1. Open the gate (completely giving a start input).
2. Brake the photocell beam.
3. Hold down  the remote key previously stored. After 5 seconds the flashing lamps blinks  and the relay starts clicking.
4. Release the remote key. The flashing lamp gets on and the relay stops clicking.
5. Within 10 seconds press the new remote key. The flashing lamp blinks three times and the relay clicks three times. The remote key has been saved as **START** (`r1`).

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Each terminal block input is programmable by a configuration parameter. The configuration parameters are $E1$, $E2$, $E3$, $E4$ and $E7$. $E1$ configures the input 1, $E2$ configures the input 2 and so on. In the table below there is a list of functions which can be assigned to each input.

| VALUE | DESCRIPTION | TYPE | TERMINAL BLOCK INPUT |
|---|---|---|---|
| $no$ **DISABLED** | Disable the chosen input. The inputs $E2$, $E3$ and $E4$ have the **auto-enable function:** When the terminal block input is disabled and a normally closed contact is wired to the input then the control board sets that input equal to the **SAFETY** value. For instance, if $E2$ is set to $no$ and a normally closed contact is wired to input 2, the control board sets $E2$ to $St$. | | **AVAILABLE ON ALL INPUTS** |
| $St$ **STOP** | The **stop function** stops the gate. | **N.C.** SAFETY | **INPUT 2** $E2 = St$ DEFAULT VALUE |
| $tA$ **INTERNAL (OPENING) PHOTOCELL** | *During the opening:* while the **internal (opening) photocell** is activated the control board stops the opening. When the internal photocell is deactivated the control board continues the opening. *During the closing:* If the **internal (opening) photocell** is activated the control board stops the closing and waits for the opening. The opening starts only when the **internal photocell** is deactivated. **the opening cannot be started if the internal photocell is detecting an obstacle.** | **N.C.** SAFETY | **INPUT 4** $E4 = tA$ DEFAULT VALUE |
| $tC$ **EXTERNAL (CLOSING) PHOTOCELL** *Safer setting* | *During the closing:* the **external (closing) photocell** stops the closing and starts the opening. *During the opening:* the **external (closing)photocell** activation doesn't have any effect. **the opening cannot be started if the external photocell is detecting an obstacle.** | **N.C.** SAFETY | **INPUT 3** $E4 = tC$ DEFAULT VALUE |
| $td$ **EXTERNAL (CLOSING) PHOTOCELL** | Same like $tC$ but **the opening *can be started*** even if the external (closing) photocell is detecting an obstacle. | **N.C.** | **INPUT 3** $E4 = td$ |
| $Go$ **START** | The **start** function begins a **Standard Working Cycle** : Motor A starts opening before Motor B. $b4$ seconds later, Motor B starts opening. After the pause $F0$, Motor B starts closing. $A4$ seconds later, Motor A starts closing. | **N.O.** | **INPUT 1** $E1 = Go$ DEFAULT VALUE |
| $PE$ **PEDESTRIAN** | The **pedestrian** function begins a **Pedestrian Working Cycle**: Motor **A** works normally while Motor **B** stays off. | **N.O.** | **INPUT 7** $E7 = PE$ DEFAULT VALUE |
| $oP/CL$ **OPEN/CLOSE ONLY** | The **open only** function opens the gate. The close only functions close the gate. When the control board is in stand by state the **open only** function begins a **Standard Working Cycle .** | **N.O.** | **INPUTS 1 and 7** $E1 = oP/CL$ $E7 = oP/CL$ |
| $Po/PC$ **DEAD MAN OPEN/CLOSE** | The dead man functions allow the opening/closing of the gate even if the safety inputs are activated ( I.E. stop input) and the programmed input is activated. | **N.O.** | **INPUTS 1 and 7** $E1 = oP/CL$ $E7 = oP/CL$ |
| $Eo$ **QK-SMARTM** | The **QK – SMARTM** command doesn't have any effect on the gate status. It can be used in combination with the **QK-SMARTM** module. For instance a light may be turned on through the key selector without activating the gate. | **N.O.** | **INPUTS 1 and 7** $E1 = Eo$ $E7 = Eo$ |
| $EL$ **ELECTRIC-LOCK** | The **ELECTRIC-LOCK function** activates the electric-lock with a push button wired at the terminal block input. For instance may be useful when you want unlock an electric-lock installed on a pedestrian gate beside the electric gate. (Available on remote controls, too). | **N.O.** | **INPUTS 1 and 7** $E1 = EL$ $E7 = EL$ |
| $A$ **MOTOR A LIMIT SWITCHES** | The **motor A limit switches** function manages an opening limit switch and a closing limit switch on the same terminal | **N.O.** | **INPUT 2** $E2 = A$ |
| $b$ **MOTOR B LIMIT SWITCHES** | The **motor B limit switches** function manages an opening limit switch and a closing limit switch on the same terminal block input. | **N.O.** | **INPUT 4** $E2 = b$ |

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| **Photocells Test** $t1$ | $t1 = S1 \rightarrow$ ENABLED $\qquad t1 = no \rightarrow$ DISABLED<br>Each time the gate starts, the control board checks the photocells. If no errors are detected the motor can be started. Vice versa the motor cannot start and the control board display shows $1t$. |
| **Motor Thermal Test** $t2$ | $t2 = S1 \rightarrow$ ENABLED $\qquad t2 = no \rightarrow$ DISABLED<br>Before starting a **working cycle** the motor is tested. When the display shows $9A$ the motor is in thermal protection. This test may fail if the motor is badly connected. When the motor is in thermal protection, the **working cycle** cannot be started. |

# COURTESY FUNCTIONS

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| **Default Restore** $d0$ | To restore the factory default setting, keep pressing button A or B until the display shows $d0$. After a few seconds the control board shows $no$. To execute hold down button C until the display shows $-\text{-}$. The factory default has been set and the control board state is in stand by state. This function doesn't have any effect on radio programming. |
| **Motors Working Time Programming** $P2$ | $P2$ is a procedure, it sets the working time parameters $A1$, $A2$, $b1$, $b2$ and $F0$. The procedure is is subdivided into 5 steps. They are called: $A1$, $A2$, $b1$, $b2$ and $F0$. In each step a parameter is programmed. During the whole programming procedure the obstacle detection sensor is disabled. To begin this procedure hold down or keep pressing button A or B until the control board display shows $P2$. After a few seconds the control board display shows $-\text{-}$. Press a **start** input and the procedure starts. The **motors working time programming** works only when the gate is in **stand by**. All steps are described in the table below. |

| | |
|---|---|
| $P2 \rightarrow \text{-}\text{-}$ | The control board is ready to start the motors working time programming.<br>To go to $A1$ press any start input. |
| $A1$ | The control board is programming motor A **standard working time** $A1$.<br>Motor A is opening.<br>Motor B stays off.<br>To go to $A2$ press any start input |
| $A2$ | The control board is programming motor A **slowdown working time** $A2$.<br>Motor A is slowing.<br>Motor B stays off.<br>To go to $b1$ press any start input. |
| $b1$ | The control board is programming motor B **standard working time** $b1$.<br>Motor A stays off.<br>Motor B is opening.<br>To go to $b2$ press any start input. |
| $b2$ | The control board is programming motor B **slowdown working time** $b2$.<br>Motor A stays off.<br>Motor B is slowing.<br>To go to $F0$ press any start input |
| $F0$ | The control board is programming the **automatic closure time** $F0$.<br>Motor A stays off.<br>Motor B stays off.<br>The flashing lamp is on. After a few seconds the control board display shows the counting time. To finish the programming press any start input and wait until the gate is completely closed. |

# DECLARATION OF COMPLIANCE

**Manufacturer:** **Quiko Italy**

**Sede legale e stabilimento**
Via Seccalegno,19
36040 Sossano (VI)
Italia

declares under his own responsibility that the product:
Control board **QK-CE220BATRL4**

complies with the main safety requirements issued by the following directives:

- ✓ Radio Sets - 1999/05/EC;
- ✓ Low Voltage - 2006/95/EC;
- ✓ Electromagnetic Compatibility - **2004/108/EC**

and any revisions thereof, and complies with the provisions that implement said directives in the National Legislation of the Country of destination where the products are to be used.

Sossano, 18/09/2014

Il Legale Rappresentante
Luca Borinato