

user manual

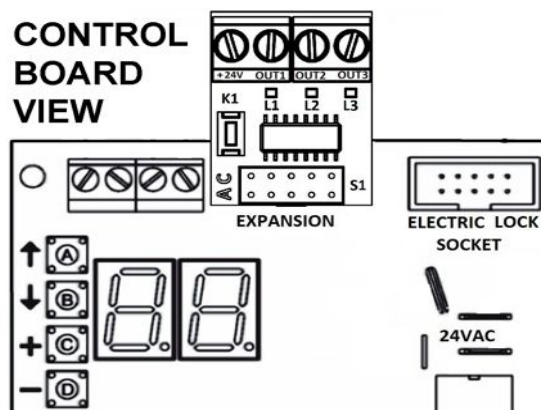
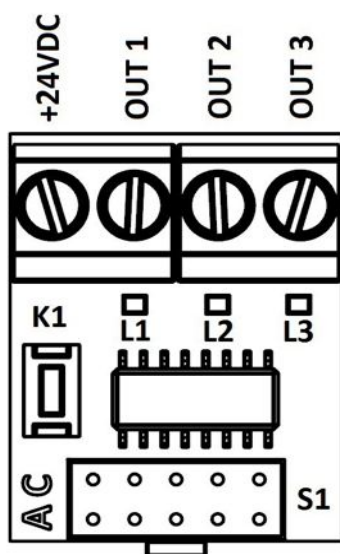
QK-SMARTM

Smart home module for QK-CE220BATRL4 and QK-CE220RL4

IMPORTANT NOTICE:

QK-SMARTM module is compatible with following control boards:

- QK-CE220RL4 control board for sliding gate motors, starting from version V18 (sw. HS2121) onward.
- QK-CE220BATRL4 control board for swing gate motors, starting from version V18 (sw. Hb2114) onward.



QK-SMARTM EXPANSION

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ATTENTION

QK-SMARTM module is compatible with following control board:

- **QK-CE220RL4** control board for **sliding gate motors**, starting from version **V18 (sw. HS2121)** onward.
- **QK-CE220BATRL4** control board for **swing gate motors**, starting from version **V18 (sw. Hb2114)** onward.

The **QK-SMARTM** expansion consists of a **QK-SMARTM** MODULE and up to three **QK-RELAY** MODULES. The **QK-SMARTM** module expands the control board with three open collector outputs. Each output controls a relay module. The **QK-SMARTM** module has a **push-button K1** to select the outputs menu and three LEDs: **L1**, **L2** and **L3**. Each LED is linked to a relay status. The LED is ON when the corresponding RELAY output is closed. The **QK-SMARTM** expansion may be used to control a variety of different applications, as for instance *timed lights controlled by remote, courtesy lights, flashing lamp, electric-lock, traffic lights*, and *extending an alarm system*.

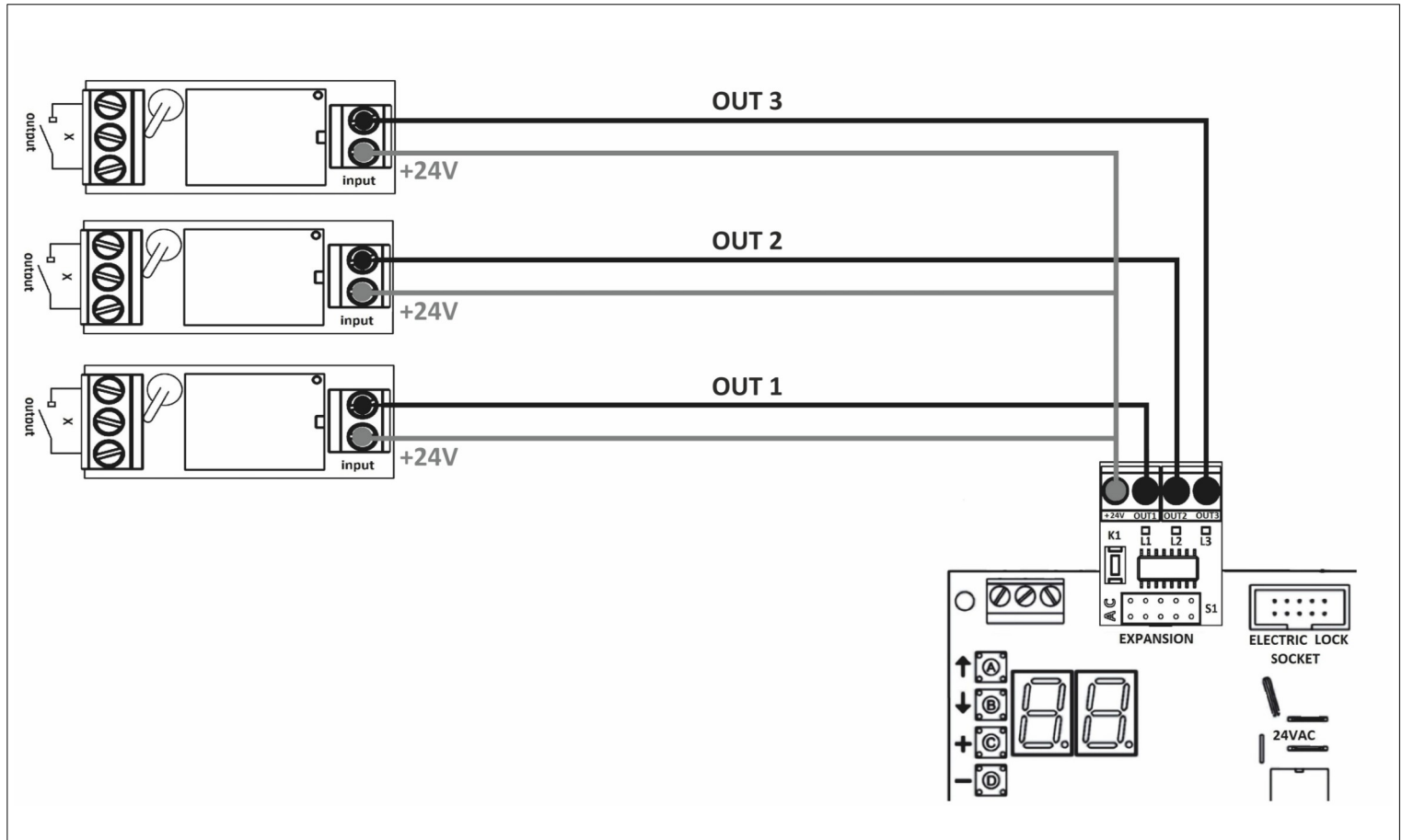
QK – SMARTM

	+24VDC	24 VDC 150 mA
	OUT1	OPEN COLLECTOR OUTPUT 1 24VDC - 40 mA
	OUT2	OPEN COLLECTOR OUTPUT 2 24VDC - 40 mA
	OUT3	OPEN COLLECTOR OUTPUT 3 24VDC - 40 mA
	L1	OUTPUT 1 LED
	L2	OUTPUT 2 LED
	L3	OUTPUT 3 LED
	K1	MENU SELECT PUSH-BUTTON
	S1	CONNECTION SOCKET INSTALL ON CONTROL BOARD EXPANSION SOCKET

QK – RELAY

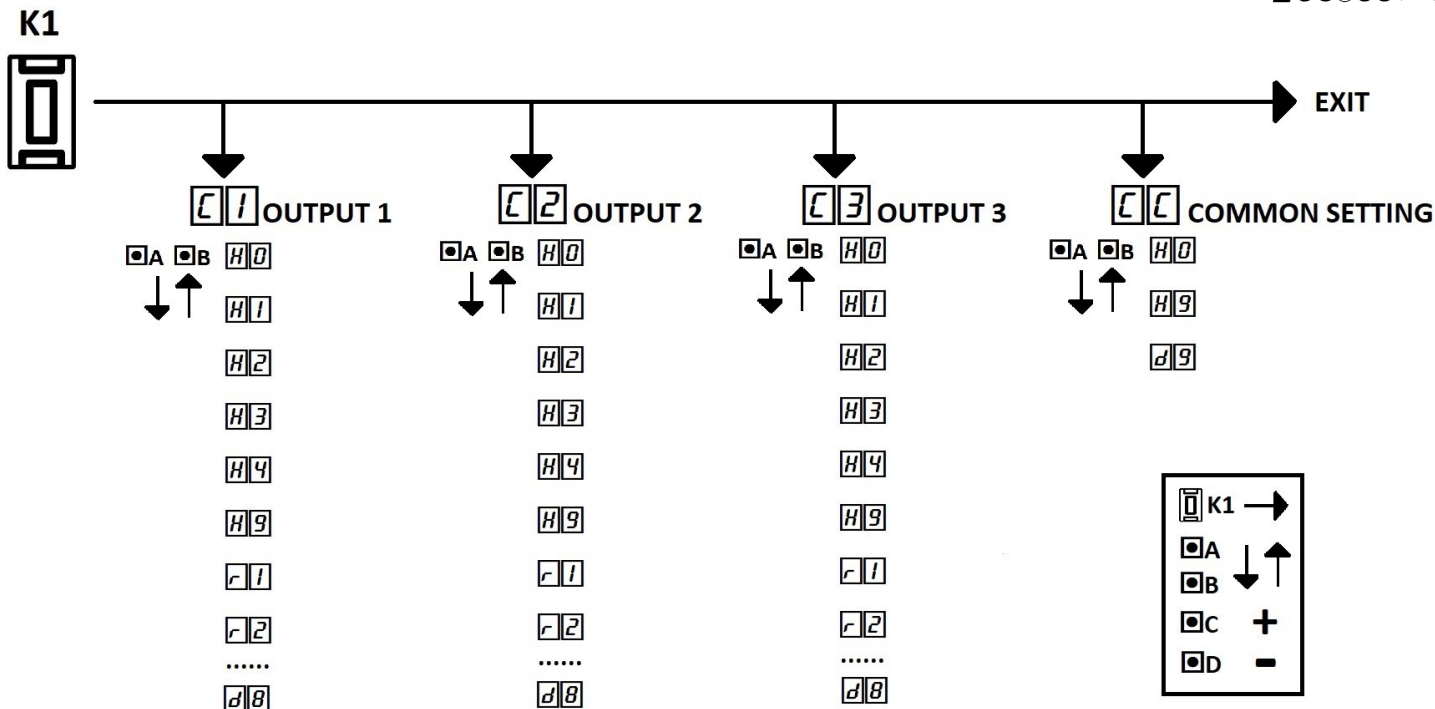
	INPUT	+24VDC	WIRE TO QK-SMARTM +24VDC
		OUT	WIRE TO QK-SMARTM OUT1 or OUT2 or OUT3
OUTPUT		120/240 VAC	7A
		12/30 VDC	7A

In the figure below is shown the connection of three relay modules with the QK – SMARTM module installed on control board expansion socket.



TYPICAL APPLICATIONS

	LIGHT
	<p>The light can be controlled by: terminal block input, remote key and gate status.</p> <p>The most useful functions are: ON, ON/OFF, ON from 0 to 99 Seconds / Minutes / Hours. QK-SMARTM controls up to 3 lights. The lights can be controlled with a single command with different function for each output (I.E. Turn On output 1 and Turn Off output 2).</p>
ELECTRIC - LOCK	ELECTRIC-LOCK
	<p>For this application you need of an external dc power supply and an electric-lock. The electric-lock can be controlled by terminal block input, remote key and gate status. This application can be used to control additional electric-lock.</p>
EXTERNAL DEVICE	EXTERNAL DEVICE
	<p>A control board with the QK-SMARTM module can command one or more external devices. The command can be sent by terminal block input, remote key and gate status. For instance this application can be used to open or close more devices at the same time.</p>



MENUS

Each output has its own menu. $[C1]/[C2]/[C3]$ are the menu of output 1/2/3 respectively. The **common settings menu** $[CC]$ acts on all outputs. The **output menu** acts only on its output. To select a menu press **K1 button**. To enter a menu press **A or B button**. Use **C or D button** to modify the settings. During programming all events are disabled, the outputs and LEDs are set to OFF. After programming may be necessary to restart the control board to make the settings effective. The programming phase starts when the A, B, C, D or K1 button is pressed.

EVENTS

Each output ($[C1], [C2], [C3]$) has the same settings. This settings allows to start a function after an event is detected. These functions are called **SMART functions**. An event is a change in the control board status. For instance the gate opening, the pressing of remote key or switching of key selectors are events. The events are based on classes. You can distinguish events and functions of a class by a letter displayed. For instance the letter G identifies the events of gate status.

EVENT CLASS	DESCRIPTION
H	H-TYPE events are generated when a H-Type remote key is pressed. The H-Type remote are all remote keys stored using the functions $[H1], [H2], [H3]$ or $[H4]$. They are called SMART remote also. A SMART remote key can be stored on more outputs with different SMART functions . The SMART remote keys do not start the gate movement.
r	R-TYPE events are generated when a R-Type remote key is pressed. The R-Type remote are all remote keys stored using the functions $[r1]$ start, $[r2]$ stop, $[r3]$ pedestrian start or $[r4]$ fast closure start in the standard menu . They are called STANDARD remote also. The SMART functions are set in the output menu using $[r1], [r2], [r3]$ or $[r4]$ parameters. All STANDARD remote of a type (I.E. $[r2]$ stop) can start different SMART functions on outputs. The STANDARD remote change the status of the gate.
E	E-TYPE events are generated when an input terminal block is activated. The gate working functions like open or close are set in the standard menu using $[E1], [E2], \dots, [E7]$ parameters. The SMART functions are set in the output menu using $[E1], [E2], \dots, [E7]$ parameters.
G	G-TYPE events are generated from the control board state. The states are: $[G1]$ turning on, $[G2]$ opening, $[G3]$ closing, $[G4]$ waiting for closing (pause time), $[G5]$ stop-opening or stop-closing, and $[G6]$ closing end.

To enter in the standard menu: press **A** or **B** when the display show $[] []$ or one of inputs like stop($[SE]$).
 To enter in the output menu: press **k1** to select the menu $[C1], [C2], [C3]$ or $[CC]$. Press **A** or **B** to enter.

Each event can be linked to a **SMART function**. The **SMART functions** are:

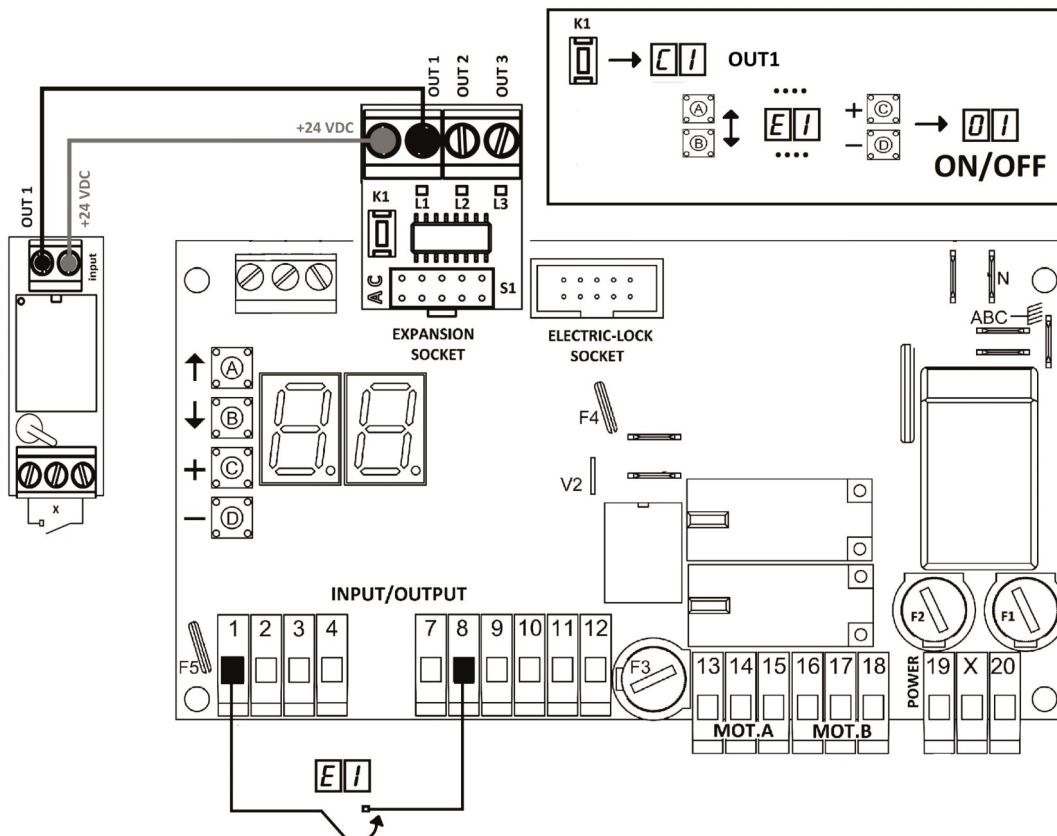
DISPLAY	SMART FUNCTION	DESCRIPTION
00	DISABLED	Event disabled. It does not have any effect.
01	ON - OFF	Event switches output value between ON and OFF.
02	ON	Event sets output to ON.
03	OFF	Event sets output to OFF.
04	ON WHILE SOURCE IS ACTIVATED	While the source is activated the output is ON. When the source is inactive the output is OFF.
05	SUSPEND OFF WHILE SOURCE IS ACTIVATED	The current function is suspended and the output is set to OFF while the source is activated.
06	FAST BLINKING	Output ON for 0.3 seconds, OFF for 0.2 seconds.
07	SLOW BLINKING	Output ON for 0.6 seconds, OFF for 0.4 seconds.
08	ON FOR E1 SECONDS	output on for E1 seconds. Min-Max value: 0-99.
09	ON FOR E2 MINUTES	output on for E2 minutes. Min-Max value: 0-99.
10	ON FOR E3 HOURS	output on for E3 hours. Min-Max value: 0-99.
11	ON FOR E3 HOURS E2 MINUTES	output on for E3 hours E2 minutes.

EVENTS ROUTING

Select the output **C1**, **C2** or **C3** pressing **K1**. Select the event pressing **A** or **B**. Select the **SMART function** pressing **C** or **D**. When the event is generated the **SMART function** starts.

EXAMPLE Turn On/Off the output 1 pressing a push-button wired on input 1

Press **K1** to select **output 1** menu. When display shows **C1** press A or B to enter in the output 1 menu. Select the event **E1** by pressing A or B. When the display show **E1** press C or D and set the SMART function **01** ON/OFF.



Each output menu contains the same events, functions and data. In the table below are listed all events, functions, and data of an output.

DISPLAY	EVENT	FUNCTION	DATA	DESCRIPTION
H0		ERASE		ERASE SMART REMOTE KEY: Select the output menu [C1], [C2] or [C3]. Select H0 function. The display shows the remote key IDs stored on the output. To erase, hold down C button when the display shows the desired ID. The display blinks. When the display is off the remote key is erased.
H1 ... H4	H – TYPE SMART REMOTE	STORE/SET		STORE SMART REMOTE KEY: Select the output menu [C1], [C2] or [C3]. Select H1, H2, H3 or H4. Hold down the remote key and press the C button. The display shows the remote ID. SET SMART FUNCTION : Select the output menu [C1], [C2] or [C3]. Select the function: H1, H2, H3 or H4. Hold down D button. The display blinks showing the selected function. When the display stops blinking release D button. Press C or D button to set the SMART function from 00 to 11.
H9		ERASE ALL		ERASE ALL SMART REMOTE KEYS: Select the output menu [C1], [C2] or [C3]. Select H9 function. Press C button. The display blinks showing 51. When the display stops blinking showing 51, the erasing is complete.
r1 ... r4	R - TYPE STANDARD REMOTE	SET		The STANDARD remote are r1 start, r2 stop, r3 pedestrian start, and r4 fast closure start. SET SMART FUNCTION Select the output menu [C1], [C2] or [C3]. Select the function: r1, r2, r3 or r4. Press C or D button to set the SMART function from 00 to 11. <i>The storing and erasing function are available in the classic menu.</i>
E1 ... E7	E - TYPE TERMINAL BLOCK INPUT	SET		SET SMART FUNCTION Select the output menu [C1], [C2] or [C3]. Select the function: E1 input1, E2 input 2, E3 input 3, .. E7 input 7. Press C or D button to set the SMART function from 00 to 11.
G1 ... G6	G-TYPE GATE STATUS	SET		SET SMART FUNCTION: Select the output menu [C1], [C2] or [C3]. Select the G-type parameter: G1 turning on, G2 opening, G3 closing, G4 waiting for closing (pause time), G5 stop-opening/closing, G6 closing end. Press C or D button to set the SMART function from 00 to 11.
E1		+	TIMER MIN MAX 00 99	E1 → SECONDS E2 → MINUTES E3 → HOURS
E2				+/-: Select the output menu [C1], [C2] or [C3]. Select the timer E1, E2 or E3. Press C to increase by 1. Press D to decrease by 1.
E3				
PH		+	SOURCE PRIORITY MIN MAX 01 05	Each event type has a programmable priority. PH sets the priority of H-type remote controllers, PE sets the priority of inputs terminal block, Pr sets priority of standard type remote controllers, and PG sets priority of gate status. When two or more sources are active, only the function linked to highest priority source will be set.
Pr				
PE				
PG				+/-: Select the output menu [C1], [C2] or [C3]. Select PH, Pr, PE or PG. Press C to increase by 1. Press D to decrease by 1.

Each output menu contains the same events, functions and data. In the table below are listed all events, outputs and data of output.

DISPLAY	EVENT	FUNCTION	DATA	DESCRIPTION
<input type="checkbox"/> H		ENABLE DISABLED	OPTION MIN MAX 00 01	<p>ENABLE/DISABLE KEEP COUNTING OPTION: Select the output menu <input type="checkbox"/> 1, <input type="checkbox"/> 2 or <input type="checkbox"/> 3. Select the option <input type="checkbox"/> H, <input type="checkbox"/> r or <input type="checkbox"/> E. Press C to set <input type="checkbox"/> 1 (enabled) or Press D to set <input type="checkbox"/> 0 (disabled).</p> <p>When one of following SMART functions: <input type="checkbox"/> 0, <input type="checkbox"/> 9, <input type="checkbox"/> 10 or <input type="checkbox"/> 11 is running and this option is enabled the counter is reset only from events with higher priority. This option can be enabled for these class events: H-TYPE, R-TYPE or E-TYPE.</p>
<input type="checkbox"/> r				
<input type="checkbox"/> E				
<input type="checkbox"/> 1 ... <input type="checkbox"/> 8		SET		<p>SET A PRE-PROGRAMMED CONFIGURATION: Select the output menu <input type="checkbox"/> 1, <input type="checkbox"/> 2 or <input type="checkbox"/> 3. Select the configuration from <input type="checkbox"/> 1 to <input type="checkbox"/> 8. Press C button. The display blinks showing the selected configurations. When the display shows the output menu <input type="checkbox"/> 1, <input type="checkbox"/> 2 or <input type="checkbox"/> 3 the configuration is set. There are eight pre-programmed configurations. Each configuration can be used to manage an application. The applications are:</p> <p><input type="checkbox"/> 1 Timed light is used to control a light with a remote key. Store a SMART remote key with following functions for:</p> <ul style="list-style-type: none"> • <input type="checkbox"/> H1 → ON/OFF • <input type="checkbox"/> H2 → ON for 90 seconds. • <input type="checkbox"/> H3 → ON for 60 minutes. • <input type="checkbox"/> H4 → ON for 12 hours. <p><input type="checkbox"/> 2 Flashing lamp At opening/closing the flashing lamp blinks rapidly/slowly. at pause time the flashing lamp is ON. the flashing lamp is OFF When the photocells beam is broken, otherwise is OFF.</p> <p><input type="checkbox"/> 3 Electric-lock. The electric-lock is activated for 3 seconds when:</p> <ul style="list-style-type: none"> • The gate starts opening. • A remote key stored with <input type="checkbox"/> H2 functions is pressed. <p><input type="checkbox"/> 4 Alarm configures the photocells as extension of an existing alarm system. When the gate is closed and a photocell beam is broken the output will be ON for 3 seconds. Press a remote key stored using <input type="checkbox"/> H2 function to set the output ON for 3 seconds.</p> <p><input type="checkbox"/> 5 Courtesy light is used to control a light from more sources: gate status, photocells or remote. When the gate is opening/closing the light is ON. During the automatic closure time the light is ON. In stop-closing or stop-opening state the light is ON for 3 minutes. When a photocell beam is broken the light is ON for 30 seconds. Store a SMART remote key with following functions for:</p> <ul style="list-style-type: none"> • <input type="checkbox"/> H1 → Turn ON/OFF. • <input type="checkbox"/> H2 → Turn ON for 30 seconds. • <input type="checkbox"/> H3 → Turn ON for 3 minutes. • <input type="checkbox"/> H4 → Turn ON for 1 hours. <p><input type="checkbox"/> 6 Gate open: set the output to ON when the gate is open.</p> <p><input type="checkbox"/> 7 Gate closed: set the output to ON when the gate is closed.</p> <p><input type="checkbox"/> 8 disabled: the output is off. All events are set to <input type="checkbox"/> n0 disabled.</p>

COMMON SETTING MENU

The common settings menu acts on all output.

DISPLAY	EVENT	FUNCTION	DATA	DESCRIPTION
H0		ERASE		ERASE SMART REMOTE: Select common settings menu C . Select H0 function. The display shows all the remote key IDs stored on all outputs. When the display shown the desired ID hold down C button to erase. The display starts blinking. After the remote key has been erased the display turns off
H9		ERASE ALL		ERASE ALL SMART REMOTE KEYS: select common settings menu C . Select H9 function. Press C button . The display blinks showing S1 . When the display stops blinking showing S1 the erasing is complete. All remote keys are erased on all outputs.
d9		SET		SET FACTORY CONFIGURATION: select common settings menu C . Select d9 configuration. Press C button. The display blinks showing d9 . After the factory settings have been set, the display shows C Output 1 → timed light d1 Store a SMART remote key with following functions for: <ul style="list-style-type: none"> H1 → ON/OFF H2 → ON for 90 seconds. H3 → ON for 60 minutes. H4 → ON for 12 hours. Output 2 → gate open d6 Set the output 2 to ON when the gate is open. Output 3 → gate closed d7 Set the output 3 to ON when the gate is closed.

FACTORY CONFIGURATION

The control board is supplied with the following configurations programmed:

OUTPUT 1 → <i>timed light</i> d1	OUTPUT 2 → <i>gate open</i> d6	OUTPUT 3 → <i>gate closed</i> d7
Store a SMART remote key with following functions for: <ul style="list-style-type: none"> H1 → ON/OFF H2 → ON for 90 seconds. H3 → ON for 60 minutes. H4 → ON for 12 hours. 	The output is ON when the gate is open.	The output is on when the gate is closed.

PRE-PROGRAMMED CONFIGURATIONS

For sliding control board

		01 timed light	02 flashing lamp	03 electric lock	04 alarm	05 courtesy light	06 gate open	07 gate closed	08 disabled
H1	SMART REMOTE	01 ON/OFF				01 ON/OFF			
H2	SMART REMOTE	08 ON t1 Secs		08 ON t1 Secs	08 ON t1 Secs	08 ON t1 Secs			
H3	SMART REMOTE	09 ON t2 Mins				09 ON t2 Mins			
H4	SMART REMOTE	10 ON t3 Hours				10 ON t3 Hours			
F1	START REMOTE								
F2	STOP REMOTE								
F3	PED. REMTOE								
F4	F.CL. REMOTE								
E1	T.B. INPUT 1								
E2	T.B. INPUT 2								
E3	T.B. INPUT 3		05 SUSPEND		08 ON t1 Secs	08 ON t1 Secs			
E4	T.B. INPUT 4		05 SUSPEND		08 ON t1 Secs	08 ON t1 Secs			
E5	T.B. INPUT 5						03 OFF	02 ON	
E6	T.B. INPUT 6						02 ON	03 OFF	
E7	T.B. INPUT 7								
G1	TURINING ON							02 ON	
G2	OPENING		06 FAST BL.		03 OFF	02 ON	02 ON	03 OFF	
G3	CLOSING		07 SLOW BL.		03 OFF	02 ON	02 ON		
G4	PAUSE		02 ON		03 OFF	02 ON	02 ON		
G5	STOP		03 OFF		03 OFF	08 ON t1 Secs	02 ON		
G6	CLOSING END		03 OFF			09 ON t2 Mins	03 OFF	02 ON	
E1	TIMER SECS	90 SECONDS		03 SECONDS	03 SECONDS	60 SECONDS			
E2	TIMER MINS	60 MINUTES				03 MINUTES			
E3	TIMER HOURS	12 HOURS				01 HOURS			
PH	SMART REMOTE PRIORITY				02	02			
PF	START - STOP - PED - F.CL. REMOTE PRIORITY								
PE	T.B. INPUT PRIORITY								
PG	GATE PRIORITY				02	02			
oH	SMART REMOTE KEEP COUNTING								
oF	START - STOP - PED - F.CL. REMOTE KEEP COUNTING								
oE	T.B. INPUT KEEP COUNTING								

PRE-PROGRAMMED CONFIGURATIONS

For swing control board

		01 timed light	02 flashing lamp	03 electric lock	04 alarm	05 courtesy light	06 gate open	07 gate closed	08 disabled
H1	SMART REMOTE	01 ON/OFF				01 ON/OFF			
H2	SMART REMOTE	08 ON t1 Secs		08 ON t1 Secs	08 ON t1 Secs	08 ON t1 Secs			
H3	SMART REMOTE	09 ON t2 Mins				09 ON t2 Mins			
H4	SMART REMOTE	10 ON t3 Hours				10 ON t3 Hours			
F1	START REMOTE								
F2	STOP REMOTE								
F3	PED. REMTOE								
F4	F.CL. REMOTE								
E1	T.B. INPUT 1								
E2	T.B. INPUT 2								
E3	T.B. INPUT 3		05 SUSPEND		08 ON t1 Secs	08 ON t1 Secs			
E4	T.B. INPUT 4		05 SUSPEND		08 ON t1 Secs	08 ON t1 Secs			
E7	T.B. INPUT 7								
01	TURINING ON							02 ON	
02	OPENING		06 FAST BL.		03 OFF	02 ON	02 ON	03 OFF	
03	CLOSING		07 SLOW BL.		03 OFF	02 ON	02 ON		
04	PAUSE		02 ON		03 OFF	02 ON	02 ON		
05	STOP		03 OFF		03 OFF	08 ON t1 Secs	02 ON		
06	CLOSING END		03 OFF			09 ON t2 Mins	03 OFF	02 ON	
E1	TIMER SECS	90 SECONDS		03 SECONDS	03 SECONDS	60 SECONDS			
E2	TIMER MINS	60 MINUTES				03 MINUTES			
E3	TIMER HOURS	12 HOURS				01 HOURS			
PH	SMART REMOTE PRIORITY				02	02			
PF	START - STOP - PED - F.CL. REMOTE PRIORITY								
PE	T.B. INPUT PRIORITY								
PG	GATE PRIORITY				02	02			
oH	SMART REMOTE KEEP COUNTING								
oF	START - STOP - PED - F.CL. REMOTE KEEP COUNTING								
oE	T.B. INPUT KEEP COUNTING								



Quiko Italy

Via Seccalegno, 19
36040 Sossano (VI) - Italy
Tel. +39 0444 785513
Fax +39 0444 782371
info@quiko.biz
www.quikoitaly.com



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the quality of its products without
any prior notice.*

www.quikoitaly.com

