

## SMART SW



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## DESCRIPTION

Smart Sw is a versatile device for the home & building automation. It can perform several functions easily programmable with the dedicated Android App and be remotely controlled by one or more key-fobs with a high degree of digital protection.

## INSTALLATION

**Warning! Work on electrical connection only after the supply voltage has been switched off.**

Smart Sw enclosure is suitable to be installed inside electrical junction boxes, electronic devices or to be fixed on wall. To access the 10A model terminal blocks remove the 4 screws which hold the 2 orange protection covers.

Terminal blocks connection:

The 2 poles terminal block has to be connected to the power supply (80 - 240V AC) following line and neutral symbols, the 3 pole block is connected to the contacts of a relay (voltage free), the sticker show the connection diagram where NC indicates the normally CLOSE contact, NO indicates the normally open contact and COM indicates the common contact.

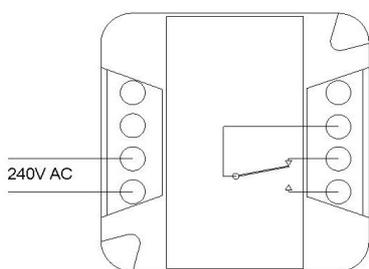


fig 1: 6A switch

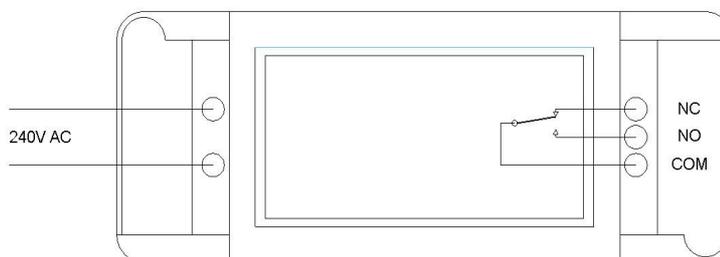


fig 2: 10A switch

## PROGRAMMING

Download and install the Android App “[LC Param Manager](#)” for the parameters setting from **Google Play Store**. (be sure the phone is equipped with the NFC antenna).

Setting up of switch parameters is done wireless via Near Field Communication (NFC) technology. When asked by the App, to communicate, the phone has to be placed on top of the Smart enclosure where the NFC symbol is.

## FUNCTIONS

Smart Sw can perform different functions selectable from the “Set up menu” (accessible via the “Select Switch Type” button) like:

-Remote Control ON/OFF SWITCH: The switch is turned ON and OFF by keyfob.

-Remote Control ON/OFF TIME SWITCH: Like a timer switch, enabled by keyfob, turn ON and OFF, according to daily/weekly programmable time charts.

-Remote Control DUTY CYCLE SWITCH: The switch, enabled by keyfob, turn ON and OFF cyclically according to programmable duty cycle times.

-Remote Control PULSE SWITCH: The switch, enabled by keyfob, turn ON briefly (impulses) a certain amount of times. Duration, number and lapse between impulses is programmable by App.

-ON/OFF TIME SWITCH: The switch is always enabled and turn ON and OFF according to daily/weekly programmable time charts.

## WiFi SERVER COMMANDS

The device can be controlled as well as the keyfobs also with an internet browser like Firefox, Chrome, Opera. For this purpose it's available the “WiFi server bridge 433” whose detailed description is given on our site.

## PASSWORD

It's possible to set a password from the App to block parameter modification and new keyfobs registration. PW setting can be done from **MENU->SET UP MENU->Change password**.

**N.B.** If a new password is to be activated leave empty the textfield "Current Password", if instead the password is to be deactivated leave empty textfiels "New Password" and "Re-type Password". If the password is to be changed fill all the textfields.

## CLOCK

To turn ON the switch, according to time charts defined using the "Remote Control ON/OFF TIME SWITCH" e "ON/OFF TIME SWITCH" functions, Smat Sw utilize an integrated clock.

The App allow to update date and time of the clock. To do that, enter the "Clock Adjust" page (*Menu → Daily schedule\Weekly schedule → Clock Adjust*) e press the "Device Time/Date Adjust" button.

The internal clock is able to retain date and time for more than 24 hours in case of "black out".

The eventual loss of date and time get signalled whit an alternated red/green led, that imply the permanent deactivation of the switch till a new time update.

## PARAMETERS MANAGEABLE BY THE APP

	PARAMETER	Min-Max	Valore iniziale	DESCRIPTION
1	COMMAND TYPE	1 - 2	1	Type of command attributed to key-fobs buttons: 1=Toggle (negation of the previous state), 2=Function_key (one button turns ON and another button turns OFF the switch)
2	COMMAND MODE	1 - 2	1	Command mode: 1= single_click: a single push of the button is sufficient to commute the switch. 2= double_click: the first push shows the state of the switch and a second push (done while led is active) commute the state of the switch.
3	STATE RETENTION	0 - 2	0	State resume after a shut-down 0 = No, 1 = Yes, only if "MAX ON TIME"=0, 2 = Yes with turning off time "MAX ON TIME" reloaded.
4	MAX ON TIME	0 - 100000	0	Time after which the switch get automatically turned OFF, following an ON command (0 = infinite).
5	MAX ON TIME UM	0 - 2	0	"OFF DELAY" unit of measurement: 0 = sec, 1 = min, 2 = hours.
6	ON TIME DC	0 - 100000	0	Duty Cycle ON time.
7	OFF TIME DC	0 - 100000	10	Duty Cycle OFF time.
8	DC TIME UM	0 - 2	0	"ON TIME DC" and "OFF TIME DC" unit of measurement; 0 = sec, 1 = min, 2 = hours.
9	CYCLE TIME	0 - 100000	0	"Pulse Switch" cycle duration.
10	CYCLE TIME UM	0 - 2	0	"CYCLE TIME" unit of measurement: 0 = sec, 1 = min, 2 = hours.
11	IMPULSE NUMBER	0 - 100000	0	Number of impulses (0 = infinite).
12	IMPULSE TIME	1 - 250	1	Impulse duration (s).
13	LED MODE	0 - 5	0	Smart Sw led signalling mode: <b>0</b> = led always on according to the raly state (ON = red, OFF = green), * <b>1</b> = led flash to signal a relay state change: (OFF->ON) = red flash, (ON->OFF) = green flash, <b>2</b> = if configured as "hour switch": green led ON when device OFF, red led ON when device ON; else: green led power ON, yellow (red+green) led supply and relay ON; <b>3</b> = green led flash to signal command reception, red led signal relay ON; <b>4</b> = green led during signal reception, red led during signal transmission; <b>5</b> = leds always OFF.
				* When the switch is configured as ON/OFF TIME SWITCH led signaling is as parameter=0 even if the parameter value is different. The keyfob led in this case indicate the switch ON/OFF ( green= deactivated, red = activated)
14	DEL POWER ON	0 - 10	1	Relay activation delay after a "power outage" to avoid a simultaneous activation of too many loads.



15	TX POWER	1 - 5	5	Switch RF transmission power level (1=+2 dB, 2=+5 dB, 3=+8 dB, 4=+13 dB, 5=+20 dB).
16	KEYS POWER	1 - 3	3	Key-fob RF transmission power level (1=+5 dB, 2=+10 dB, 3=+12 dB).
17	PROG CHANNEL	1 - 30	30	Programmed radio channel
18	CHAN SEL MODE	0 - 2	0	Radio channel selection: 0= standard channel, 1= channel selected from "PROG CHANNEL" parameter. 2= channel randomly selected between those available
19	CMD REPEAT TIMES	0 - 2	0	Command repetition without a received reply (0 = don't repeat)
20	ADDRESS BYTE	3 - 8	3	Address byte number
21	SECURITY BYTE	6 - 16	6	Security byte number
22	MAX COHERENCE ERR	1 - 20	3	Highest number of incoherent commands in the assigned time window
23	WINDOW COUNT ERR	1 - 2880	1	Incoherent commands counting time window (min)
24	INHIBIT TIME	0 - 3600	10	Inhibition time after incoherent errors threshold crossing (sec)
25	KEY COPY ENABLE	0 - 2	1	Enabling of keyfob button cloning 0= disabled, 1= buttons can be cloned but "clones" are not allowed to be cloned, 2= buttons can be cloned and also "clones" are allowed to be cloned.

### KEYFOB

The pocket sized keyfob has two buttons and three colours (green/red/yellow) signalling led. Before being used it must first be registered to its "slave" Smart Sw device. Registration procedure attribute to the single button a code to control the "slave device". The procedure therefore, has to be repeated for every button which we want to relate with a Smart Sw.

### System operation

Keyfob buttons can perform in two different modes according to the value attributed to "COMMAND MODE" parameter. With COMMAND MODE=1, a single push of a button make the state of the switch change and the led colour show the new state (green=ON e red=OFF). With COMMAND MODE=2 a single push of a shows present state of the Smart Sw (green=ON e red=OFF), to change present state, the button has to be pressed a second time while the led indicating present state is still on.

The ON/OFF action can be managed by two buttons, (one to activate and the other to deactivate the Smart Sw) if parameter "COMMAND TYPE" = 2 , or by just one button if parameter "COMMAND TYPE"=1.

**Please note.** Changing Smart Switch parameters can imply the generation of a new digital security key so the impossibility to command the switch with previous registered keyfobs. In that case the App notify the operator with a warning of the consequent loss of communication with previous keyfobs and waits for confirmation. There is no limit to the buttons associable with a *Smart Switch*, keyfobs can also be registered and command different Smart Sw. Every single button though can command one single device.

### Keyfob registration procedure

To register a new keyfob start the App and push the "Start NFC Connection", then put in contact your phone antenna with the top surface of the control unit where the NFC symbol is. After a few moments device records will appear on the screen together with buttons to access the general settings menu. To proceed, push the "Device Registration" button and again put in contact your phone with the NFC symbol on the sticker, now the control unit LED begin to blink yellow for a few seconds allowing registration of a new keyfob button which is achieved by pushing the button for about 3 seconds.

Registration is confirmed by the key-fob with a series of 4 green blinks. If the key-fob was previously registered to another Smart Sw, it's necessary to erase the previous registration, before attempting a new registration.

**Please note** If when pushing the button it immediately emits a single yellow blink, it means that the button was already registered and to be registered again, the previous registration need to be erased. To do that you need to push the button for about 10 seconds, until the green LED start to blink, release the button and push it again for about 10 seconds, until the red LED blinks briefly. Button is erased if when pushing it a yellow blink appears after about 3 seconds.

### Keyfob cloning procedure



If a button has been registered with parameter “KEY COPY ENABLE”=1, it is possible to clone that button to another keyfob by pressing the button for about 10 s until the keyfob yellow led starts to blink, keeping the button pressed, now press the button that need to become a clone until it's relative green led blinks briefly confirming the occurred clonation. The button so obtained cannot be used to do other clonation. If pushed for about 10 seconds, the cloned button generate a green led blink instead of a yellow blink.

If the original button has been registered with parameter “KEY COPY ENABLE”=2, then also its clones can be themselves cloned.

### Battery replacement

Key-fob is powered by a CR2032 battery type. For the replacement the screws on the enclosure have to be removed. Then open the shell enclosure using a small flat blade screwdriver and remove the PCB contained inside the shell. Push the battery out of the battery older, and insert a new one respecting the battery polarity. Reposition the PCB in the half shell which has 2 pins making sure the battery side face down, close the shell and screw the 2 previously removed screws.

### CHARACTERISTICS DATA

SMART SW	
Power supply	80 — 240 VAC 50/60Hz
Power drain (with relay ON)	~ 0,15 W ( ~ 0,6W)
Parameters read/write	Port NFC prot. IEC 14443 Type B
Enclosure dimensions	29x45x115 mm
Weight	~ 80 gr.
Enclosure protection	IP54
Relay current ratings	240 VAC / 10A ; 30VDC / 10A
Date and time retention in case of “black out”	>24 ore
Operating temperature	-10 — +50°C
KEY-FPOB	
Number of buttons	2- 4
Shell dimensions	56,8x44x14,5mm
Operating frequency shell	ISM 433 MHz
Transmitted signal power	< 10dBmW
Shell protection	IP65
Battery type	CR2032
Battery life *	> 5 years
Radio range	20 / 50 m
Operating temperature	-10 — +50°C

\* life get calculated for 10 commands per day

### WARRANTY

The warranty period of 2 years start on day of purchase.

Warranty doesn't cover damages caused by:

- wrong installation,
- failure to observe these instructions,
- tampering, modifications or reparation attempt,
- wrong use,
- failure to observe safety regulation in force,



- majeure force (e.g. over-voltages, fire etc.)

Warranty does not include direct or indirect damages due to device defects, or costs derived from installation or removal labour.

In case of malfunction will be our liberty to choose if to replace, fix or refund the cost of the device.

### **SWITCH PARAMETERS READ WRITE WITH SMARTPHONE**

To obtain a connection between smartphone and control unit, take the following steps:

- 1- Make sure the control unit is connected to AC power source (led on).
- 2- Start the dedicated Android application downloadable at <http://www.lorencontrols.eu>
- 3- Push the "Start NFC Connection" button, under the "Loren Controls" logo.
- 4- Like asked by message on the screen, place the phone on top of the Smart Sw enclosure where the NFC symbol is.
- 5- If the connection is activated, another screen will appear, showing Software/Hardware data and 2 buttons.  
The first button "SET UP MENU" access the parameter setting menu and the second button "DEVICE REGISTRATION" start the sensor registration procedure (check next paragraph to see phone screenshots)  
If connection fail an error message appears.
- 6- To proceed with the parameter read/write or a new key-fob registration push the dedicated button and place the phone on the Smart Sw enclosure like described above.

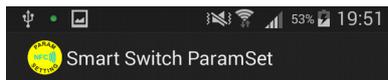
### **ANDROID SMARTPHONE APP SCREEN SEQUENCES**

Shown below are some screenshots of the app dedicated to the management of parameters.

The device is supplied with a set of default values.

Parameter modification is allowed only within relative range, if the inserted parameter is out of range it is automatically brought back to its previous value.

Under every screenshot it's "button press path" is specified. When not used, the App closes itself after a pre-set time.



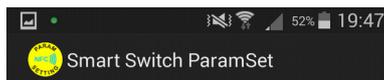
## DEVICE MANAGER

Start NFC Connection



Supported devices:  
Programmable RF switch

“First image of the App”



## DEVICE MANAGER

Device Type :

WIRELESS MULTIFUNCTION SWITCH

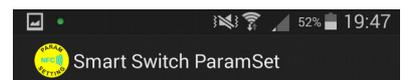
HW code : SW\_01\_KF\_001\_NFC

FW data : Code : 6 Ver : 10 Rev : 1  
Date : 30 4 2017

MENU

DEVICES REGISTRATION

Start NFC Connection



## SET UP MENU

Select switch type

Parameter settings

Daily schedule

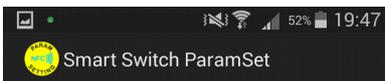
Weekly schedule

Change password

Radio settings

Security settings

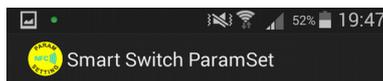
Start NFC Connection > SET\_UP MENU



## SWITCH SELECT

- Remote Control ON/OFF SWITCH
- Remote Control ON/OFF TIME SWITCH
- Remote Control DUTY CYCLE SWITCH
- Remote Control PULSE SWITCH
- ON/OFF TIME SWITCH

Start NFC Connection > SET UP MENU  
> Select Switch Type



## RadioCom ON/OFF TIME SWITCH

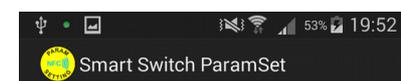
Load

Save

### Param Value

Param	Value	Unit
COMMAND TYPE	1	Step
COMMAND MODE	1	Singe Click
MAX ON TIME	0	Time
UM_ON TIME	0	sec
LED MODE	0	Number
DEL POWER ON	0	sec

Start NFC Connection > SET UP MENU  
> Parameters settings



## Daily schedule

Clock Adjust

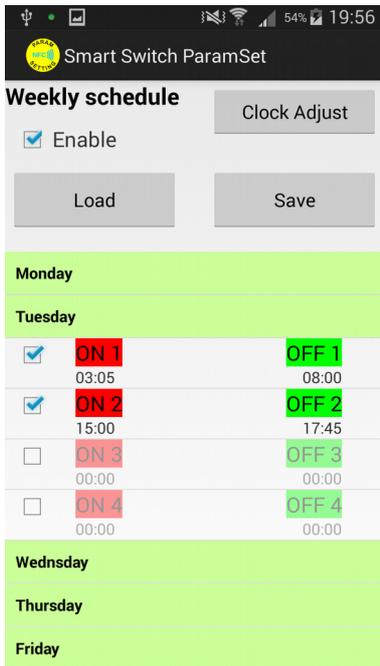
Enable

Load

Save

ON	OFF
<input type="checkbox"/> ON 1 00:00	<input type="checkbox"/> OFF 1 00:00
<input checked="" type="checkbox"/> ON 2 03:07	<input checked="" type="checkbox"/> OFF 2 07:20
<input type="checkbox"/> ON 3 00:00	<input type="checkbox"/> OFF 3 00:00
<input type="checkbox"/> ON 4 00:00	<input type="checkbox"/> OFF 4 00:00
<input type="checkbox"/> ON 5 00:00	<input type="checkbox"/> OFF 5 00:00
<input type="checkbox"/> ON 6 00:00	<input type="checkbox"/> OFF 6 00:00
<input type="checkbox"/> ON 7 00:00	<input type="checkbox"/> OFF 7 00:00
<input type="checkbox"/> ON 8 00:00	<input type="checkbox"/> OFF 8 00:00

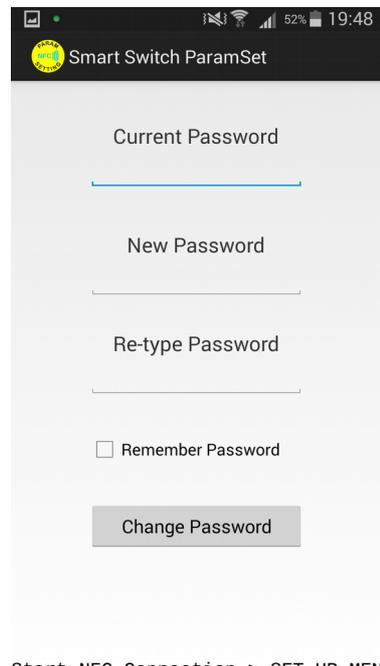
Start NFC Connection > SET UP MENU  
> Daily schedule



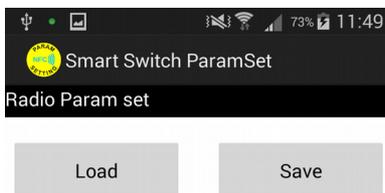
Start NFC Connection > SET UP MENU > weekly schedule



Start NFC Connection > SET UP MENU > Daily schedule > Clock Adjust

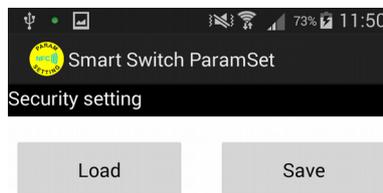


Start NFC Connection > SET UP MENU > Change Password



Param	Value	
TX POWER	5	20dBm
KEYS POWER	3	14dBm
CHANNEL SEL MODE	0	default
CMD REPEAT TIMES	0	Number

Start NFC Connection > SET UP MENU > Radio settings



Param	Value	
ADDRESS BYTES	2	Number
SECURITY BYTES	4	Number
MAX ENCRYPT ERR	3	Number
WINDOW COUNT ERR	1	min
INHIBIT TIME	10	sec
KEY COPY EN	0	No

Start NFC Connection > SET UP MENU > Security settings