



HccSoft



KNX system improvement project.
Ultimate smart home control

HccSoft

Héctor Casals
+34 619 33 14 14
hcasals@hccsoft.com
Barcelona
Spain





HccSoft

Control home KNX systems using an Android mobile. Server controls automatic lights according to sunrise and sunset. Control radiant floor, optimal distribution of solar energy, management of sanitary water accumulators, pumps and lighting of swimming pools, irrigation, etc. Event programming through management software with SQL Server as database engine. You can also access house monitor through a web browser or use the phone's microphone to give voice commands.



Main menu



User can control through his phone all functions of the house but it is really the server who decides at all times according to the time of day, temperature of solar panels or objectives set by users that plan or orders to use during that day. If user gives an opposite order, server corrects it.

Main menu has several shortcuts to frequently used actions such as voice control, hot water recycling or visit button that switch on all lights for few minutes from entrance area to house exteriors and interiors. There is another section that controls indoor pool air conditioner that dehumidifies the room and conditions it. Last shortcut button activates the recirculation of hot water for 5 minutes to avoid discarding cold water before showering.

Main menu to monitor and log screen



TEMPERAT. ENT.: 32

AGUA SANITARIA: 30

ACUMULADOR: 30

CALENTAR/PISC.: OFF

VÁLVULA PISC./AC.: OFF

PISCINA INT.: OFF

PLAC. SOLARES: 33

RET. PLACAS: 24

PISCINA INTERIOR: 16

PISCINA EXTERIOR: 14

TODO CORRECTO

AUTO: CALCULO ORTO
NUEVO DÍA! :15/11/2019
BD 01:00:00: LÁMPARA
BD 01:00:00: ARBOLES
2:49 AVISO: SUELO PL
2:59 RIEGO ON
4:00 RIEGO OFF (INVIER
4:50 AVISO: SUELO PL
BD 06:00:00: CLIMATIZ
6:51 AVISO: SUELO PL
BD 06:54:00: FOSCORIT
BD 06:54:00: PERSIANA
BD 06:59:00: PERIMETR
BD 07:14:00: RAMPA OF



HccDomo 12/11/2019

Calefacción / Termosolar 13:56

CALDERA: OFF

HABITACIÓN SUP.: ON COMEDOR/COCI.: ON

HABITACIÓN INF.: OFF RAMPA ANTIHIELO: OFF

TEMPERAT. ENT.: 28,8° TEMPERAT. RET.: 24,8°

AGUA SANITARIA: 40,6° OBJ: 30°

ACUMULADOR: 34,4° OBJ: 40°

CALENTAR/PISC.: OFF BOMBA SUELO R.: ON

VÁLVULA PISC./AC.: OFF INTERC. 120KW: OFF

PISCINA INT.: OFF PISCINA EXT.: OFF

PLAC. SOLARES: 49,52°

RET. PLACAS: 37,3° DELTA: 12,2°

PISCINA INTERIOR: 19,32° MIN: 0° MAX: 0°

RET. PISCINA: 28,7°

PISCINA EXTERIOR: 16,62°

TODO CORRECTO

You can scroll left or right to move between main menu, monitor and log screen. Monitor shows you the different automatic actions that have been performed during the day, if there are any alerts, states and temperatures of the different groups. Log shows on screen the most important automatic or manual actions that have been performed during the day.

Boiler and floor heating



In the heating screen we tried to simplify as much as possible so we left the different areas to be heated. User can choose which rooms to heat. All have their own temperature control. If it was not sunny and the boiler was cold when pressing on the recirculation button the system sends a message warning that the water is not hot enough. Clicking on the "45°" (celsius degrees) button, system will heat the accumulator up to 45 degrees and then will send a message to user to notify water is already hot. If we press the solar radiant floor button, system will activate or deactivate the radiant floor according to the solar panels performance.

Single use events

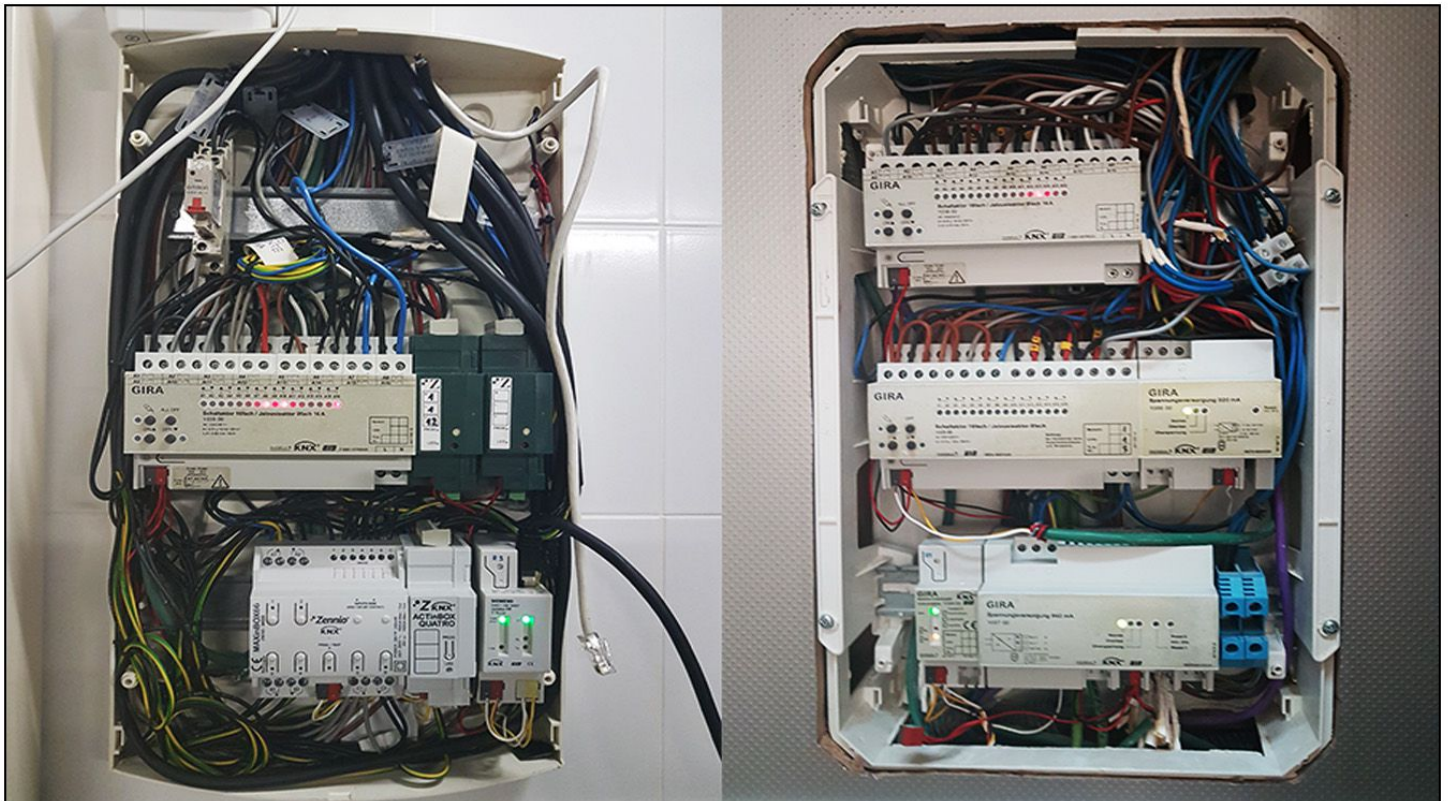


From this screen you can schedule single-use events.

If you are traveling you can add a single action to turn on heating one day before your arrival. That action will only be executed once. If the water tank is cold and you want to take a shower early in the morning, you can schedule it to warm up 15 minutes before waking up. In this way we avoid keeping the boiler hot with the associated expenses.

Hardware

Relays and some of KNX control units. Gira and Zennio for temperature control and states of devices. The house also has a sound system in each room that allows song playback through DLNA or Airplay. You can send songs to the system from the same phone or from Itunes..



Event scheduler

With the fixed event scheduler you can choose fixed schedules to perform actions on any connected object or decide if you want variable schedules depending on the time of sunrise or sunset.

TIPO: TODOS
ZONA: TODAS

AÑADIR
TODAS
BUSCAR

FUNCIONES

LÁMPARA SALIDA OFF
01:00 OFF
LUN MAR MIE JUE VIE SAB DOM

ARBOLES
01:00 OFF
LUN MAR MIE JUE VIE SAB DOM

GAS ON
05:30 ON
LUN MAR MIE JUE VIE SAB DOM

GAS OFF
06:00 OFF
LUN MAR MIE JUE VIE SAB DOM

FOSFORITOS SUBID

LÁMPARA SALIDA OFF

01:00 OFF

LUN MAR MIE JUE VIE SAB DOM

EDITAR

ACTIVAR:

ON

OFF

HORA: 1 : 0

AMANECEER:

ON

OFF

0

ATARDECER:

ON

OFF

0

ACCIÓN:

SUBIR

BAJAR

LUN MAR MIE JUE VIE

SAB DOM

NOM-BRE: LÁMPARA SALIDA OFF

GUARDAR

Event screen



In this section you have preprogrammed events that execute several actions at once. Some of them are arrival of guests to turn on all the lights in the front area of the house and hall for 10min. Travel mode to turn on the lights at random during the beginning of the night to make it appear that the house is habited. Late arrival: do not lift the blinds of the rooms until 1:00 pm. Pool exit: just dehumidify the indoor pool area and turn off the lights after a few minutes.

Advanced control



From this screen you can control the irrigation although it does it automatically according to the weather forecast. The boiler temperature and the possibility of heating indoor pool with gas.

Automatic control

The automatisms of the house are:

-According to the weather forecast, solar panels will heat the boiler's temperature more or less. In this way excess energy is dedicated to other functions such as heating pools or for heating radiant floor of the house.

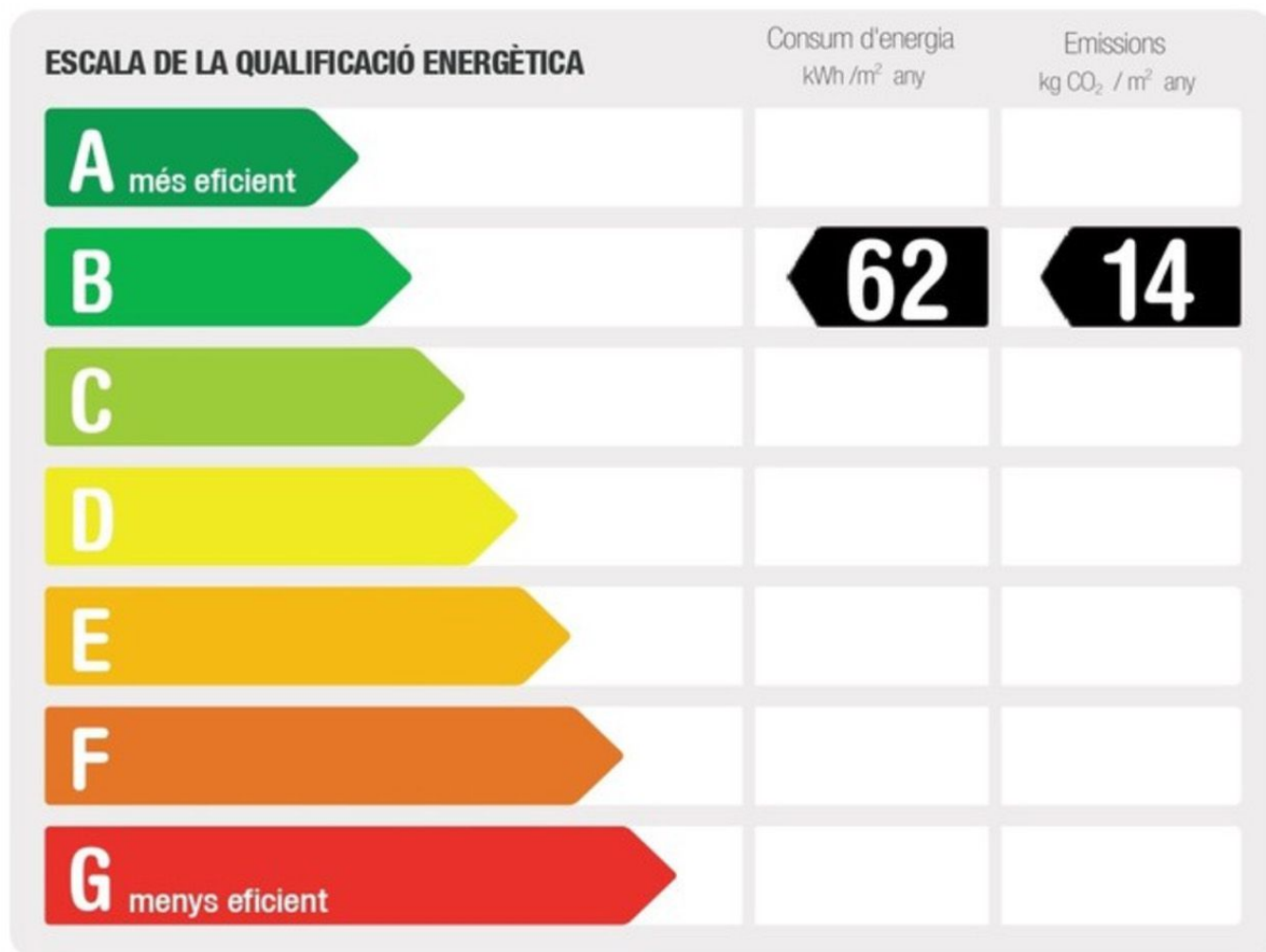
-If there is rain forecast for tomorrow or outside temperature is cold, the irrigation stops the frequency. This function saves more than 40% of water. The house also has a 20,000L (20 m³) rainwater tank and a Gira Weather station.

-The house has 14 vacuum tube thermosolar plates that help the boiler keep the indoor pool warm. Server through several valves adjusts to the consumption of the plates. On a sunny day it has up to 3 exchangers of 120Kw, 80Kw and 40kw that you can alternate or use at the same time to get the maximum solar performance without overloading the solar panel system and make the whole system stand still. Every minute the server decides which valves to activate or deactivate to heat sanitary water thermos, swimming pools or radiant floor. From mid-spring to mid-autumn the house is heat self-sufficient.

User application has 13 screens, one for each important area of the house and 4 to control events, the scheduler or another one for most advanced control. If server detects any anomaly, it can always notify the user. If the anomaly is a network failure, the server can restart it alone and at the same time notify the user. User from the same application can also restart the system.

The house even having large windows walls, 649m², and a 35 celsius degree hot indoor pool with 40,000L, has an energy rating of B thanks to the meticulous management by KNX of entire systems.

Energy consumption and valuation



Sensors and valves



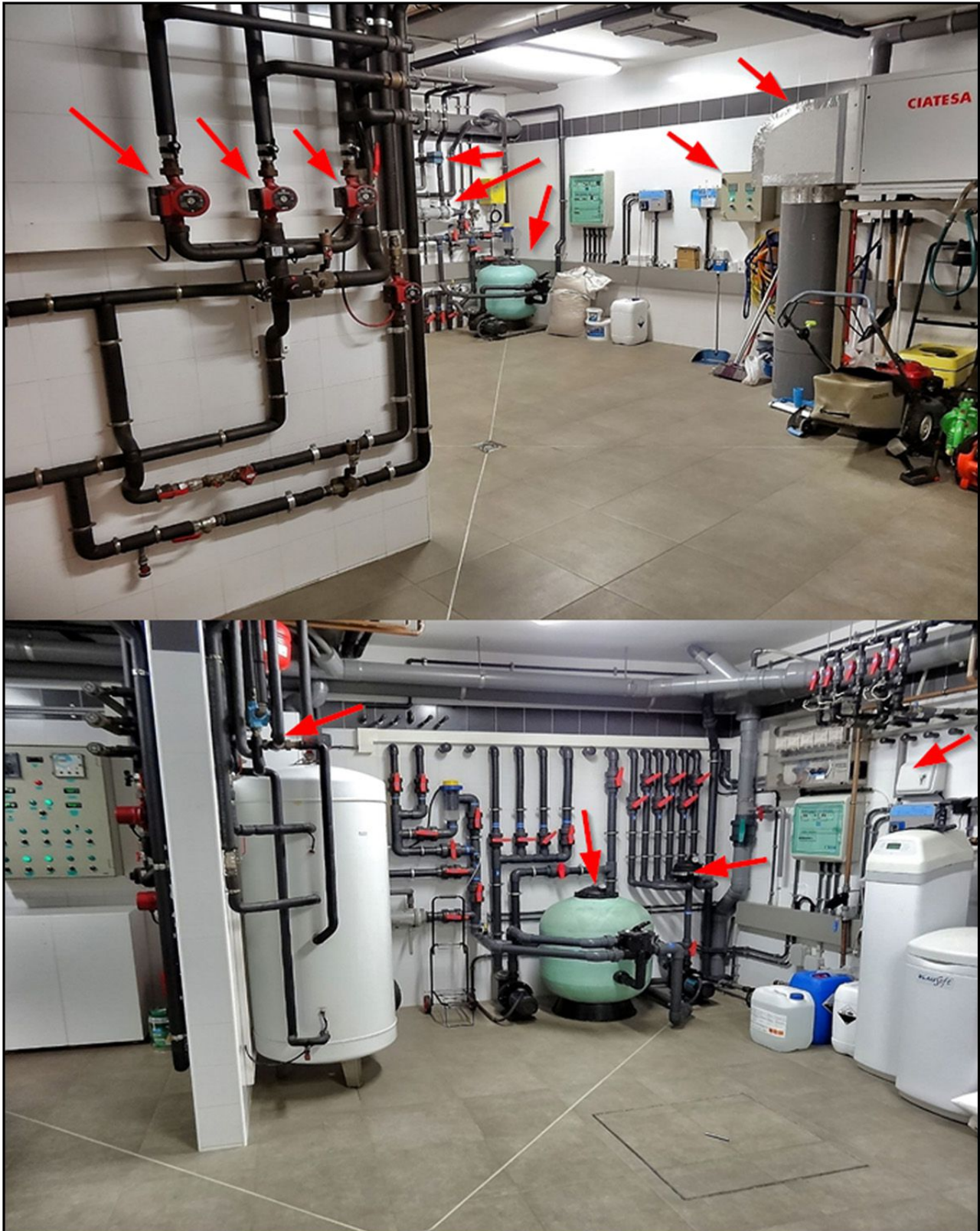
Some of the Gira motion sensors for automatic lights.

Pool lights, water and ambient temperature are also controlled from the application.



Sensors and valves

Control room. Heating, pools, water pumps, 3 heat exchangers, temperature of water and pools and management of solar thermal panels are controlled from this room.



Sensors and valves

The controls of curtains and foscursits can be activated manually although it is the server who performs everything automatically with different plans for weekend and during the week. Mobile application can also act on all the curtains or foscursits.



Control server. This screen is used to program and help installer to manually set the server. The end user don't have to access. All significant data and actions are saved in the database.

11:21:01

ORTO 07:47

OCASO 17:28

21/11/2019

CONECTADO

CONECTADO

CONECTAR TCP

UDP SERVER

CONECTAR KNX

ACCIONES DIRECTAS

DIA ON

CERRAR TODO

PLANTA BAJA SUBIR

DIA OFF

ABRIR TODO

PLANTA BAJA BAJAR

FOSCOS ARRIBA

CORTINAS ARRIBA

PLANTA SUP. SUBIR

FOSCOS ABAJO

CORTINAS ABAJO

PLANTA SUP. BAJAR

PREVISIÓN

HOY

MAÑANA

Min 5

Max 12

Min 4

Max 11

CONTADORES ESPECIALES

PISO SUPERIOR

OFF

0

RECIRCULACIÓN

OFF

0

RECIBIDOR

OFF

0

GARAJE

OFF

0

ACCIONES ANDROID Y AGENDA

AUTO: CALCULO ORTO OCASO FUNCIONES

NUEVO DIA! 21/11/2019

BD 01:00:00: LÁMPARA SALIDA OFF

BD 01:00:00: ARBOLES

2:10 AVISO: SUELO PLANTA SUP OFF. AUTOACT

2:59 RIEGO ON

4:00 RIEGO OFF (INVIERNO)

4:00 RIEGO OFF (PRIMAVERA < 20°)

4:11 AVISO: SUELO PLANTA SUP OFF. AUTOACT

BD 06:00:00: CLIMATIZADOR PISCINA

6:12 AVISO: SUELO PLANTA SUP OFF. AUTOACT

BD 07:02:00: FOSCORTES SUBIR

BD 07:02:00: PERSIANA DESPACHO SUBIR

BD 07:07:00: PERIMETRAL OFF

BD 07:22:00: RAMPA OFF

BD 07:27:00: CORTINAS COMEDOR

BD 07:37:00: PERSIANA BAÑO VERDE SUBIR

BD 07:47:00: LUCES AUTOMÁTICAS OFF

BD 07:47:00: PERSIANA GYM SUBIR

BD 07:47:00: PERSIANAS PLANTA BAJA SUBIR

8:13 AVISO: SUELO PLANTA SUP OFF. AUTOACT

BUS KNX

Monitor activado

Lugar = 0x1801, Data = 0x00

Lugar = 0x1801, Data = 0x00

CALEFACCIÓN / TERMOSOLAR

CALEFACCIÓN

HAZ. SUP

ON

COMEDOR

OFF

45°

HAZ. INF

OFF

RAMPA

OFF

50°

TEMP. ENT.

27.9°

TEMP. RET.

0°

T. Deseada: 50

AGUA SANITARIA

0°

T. Deseada: 30

TEMP. ACUM.

24.3°

CALENTAR PISCINA

OFF

BOMBA SUELO R

OFF

VALVULA PISCICU

OFF

INTERCAM. 120W

OFF

PISCINA INTERIOR

OFF

PISCINA EXTERIOR

OFF

ID_	NOMBRE	AC'	ZONA	HORA	TIPO	ACCION	ORTO	MIN.	OCASO	MIN.	LUN	MAR	MIER	JUE	VIE	SAB	DOM	AUTO OFF	OFF SEG
7	FOSCORTES BAJAR	<input type="checkbox"/>	2/0/5	18:08:00	BAJAR	1	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	40	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
7	FOSCORTES SUBIR	<input checked="" type="checkbox"/>	2/0/5	07:02:00	SUBIR	0	<input type="checkbox"/>	-45	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
5	CORTINAS COMEDOR	<input checked="" type="checkbox"/>	2/0/4	17:48:00	BAJAR	0	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
5	CORTINAS COMEDOR	<input checked="" type="checkbox"/>	2/0/4	07:27:00	SUBIR	0	<input checked="" type="checkbox"/>	-20	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
9	SUITE TODAS LAS PERSIANAS	<input type="checkbox"/>	2/0/12	10:00:00	SUBIR	1	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
19	LÁMPARA SALIDA ON	<input checked="" type="checkbox"/>	1/3/23	17:38:00	ON	1	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
19	LÁMPARA SALIDA OFF	<input checked="" type="checkbox"/>	1/3/23	01:00:00	OFF	0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
24	RAMPA ON	<input type="checkbox"/>	1/6/5	17:48:00	ON	0	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
24	RAMPA OFF	<input checked="" type="checkbox"/>	1/6/5	07:22:00	OFF	0	<input type="checkbox"/>	-25	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
23	PERIMETRAL ON	<input type="checkbox"/>	1/6/3	17:48:00	ON	0	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
23	PERIMETRAL OFF	<input checked="" type="checkbox"/>	1/6/3	07:07:00	OFF	0	<input checked="" type="checkbox"/>	-40	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0

Photos

