

Sauna Wifi Automation

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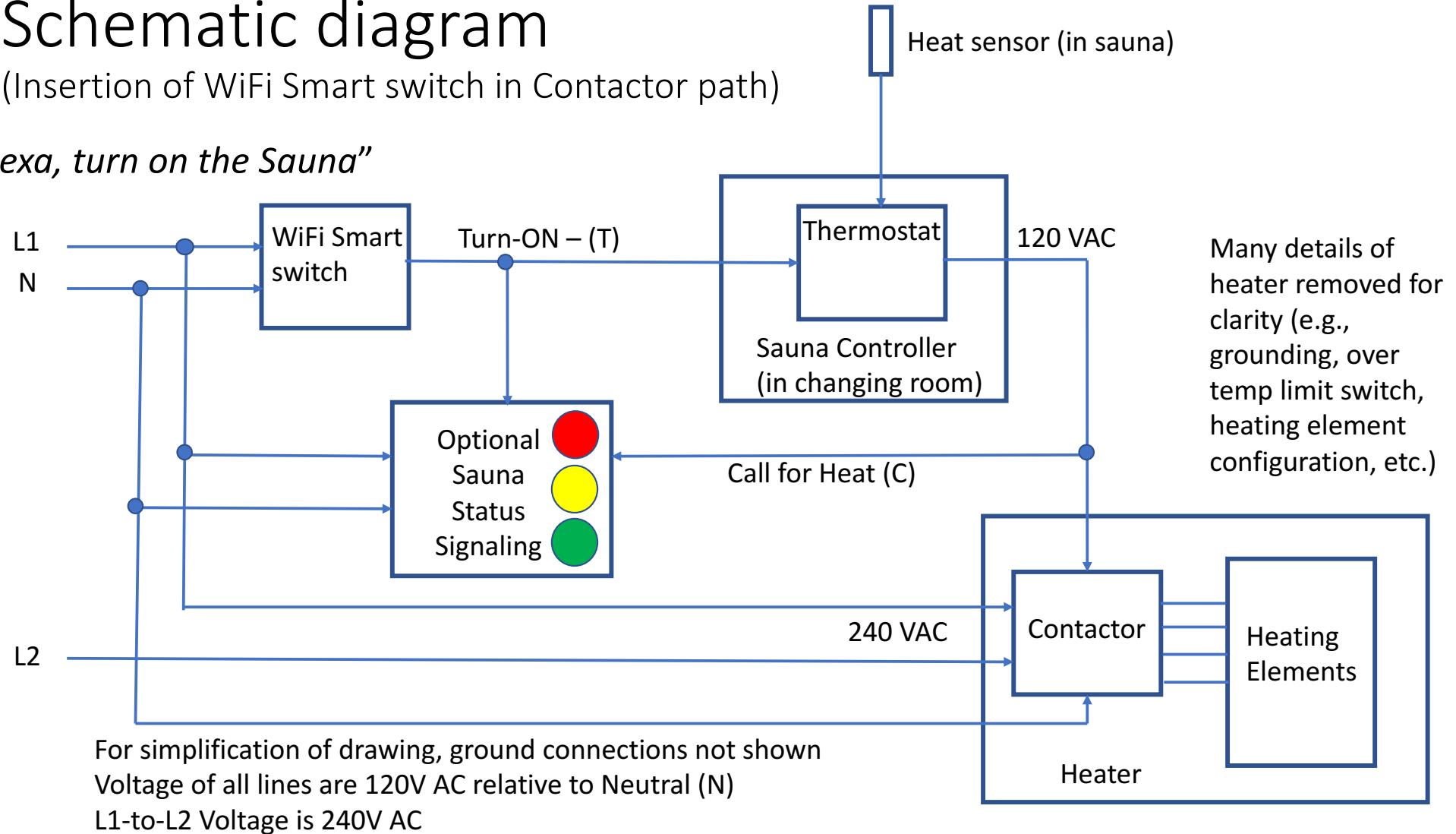
Notes

- This design utilizes a WiFi Smart switch to activate/idle a sauna heater system.
- The sauna heater is internally controlled via contactor. The contactor must be controllable with a 120V AC signal.
 - Some contactors may be wired / operating with 240V AC
 - Some of those contactors may be rated for use with 120V AC
 - If the heater has a contactor which will operate at 120V AC, this approach will work.
- A separate sauna controller has a timer, thermostat and possibly switches for internal lights for the sauna room
 - With this approach, the timer is defeated in some fashion. The output of the thermostat controls the contactor in series with the WiFi Smart switch to turn the heater on and off as the temperature sensor dictates
 - Details of timer bypass and switches for lighting are beyond the scope of this analysis and likely unique to any given heater/controller manufacture / model.
- Additional information is shown to allow visual display of Sauna status but is optional and unrelated to the use of a WiFi Smart switch to remotely control the sauna heater

Schematic diagram

(Insertion of WiFi Smart switch in Contactor path)

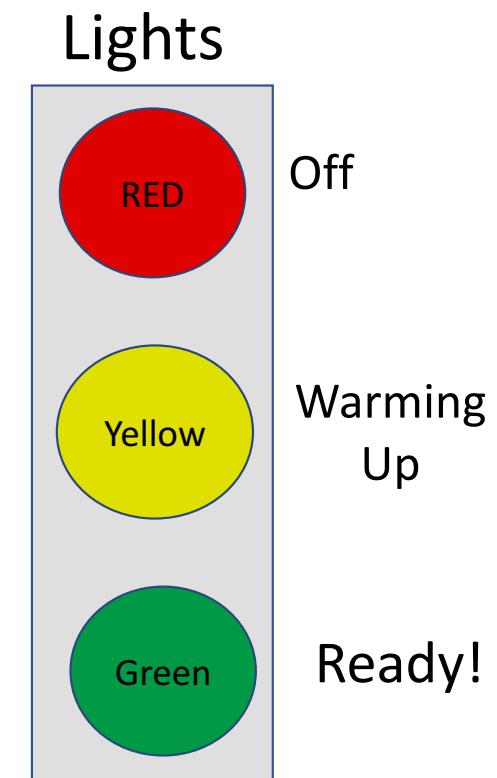
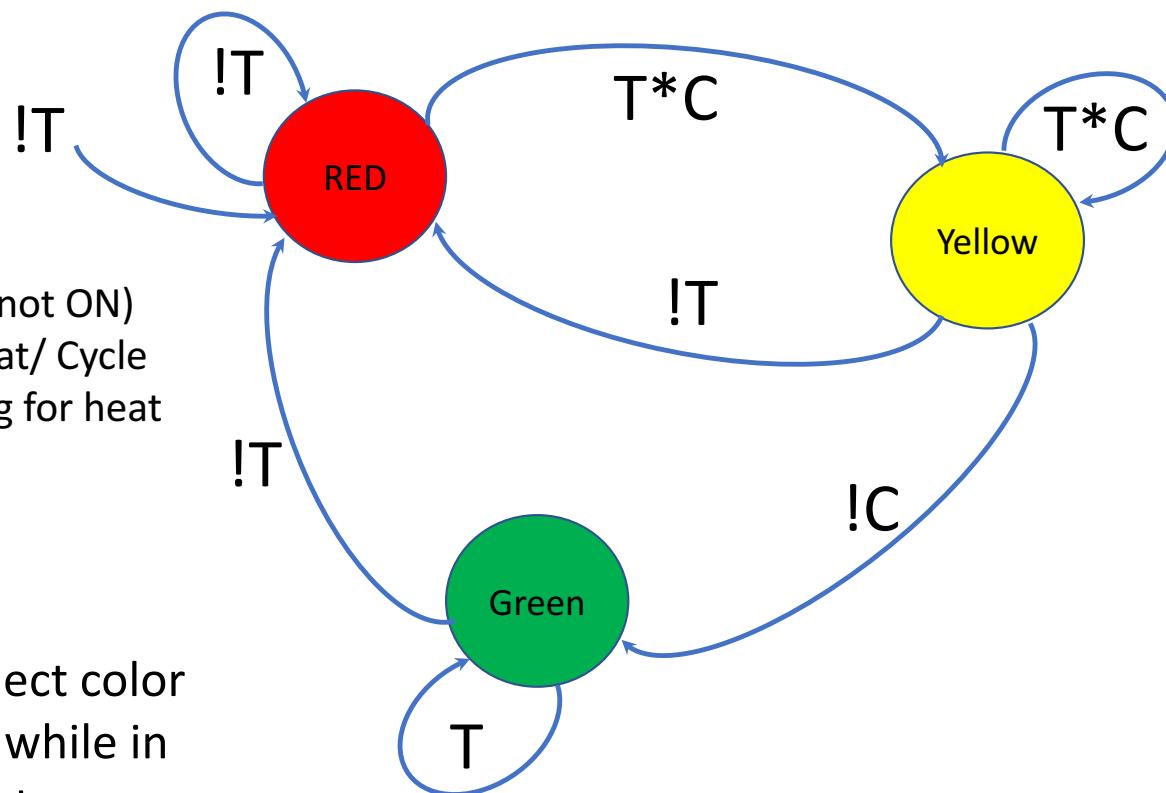
“Alexa, turn on the Sauna”



Sauna Status Signaling (Optional) State Diagram

T = Turn ON,
!T = Turn OFF (not ON)
C = Call for Heat/ Cycle
!C = Not calling for heat
 $T^*C = T \text{ AND } C$

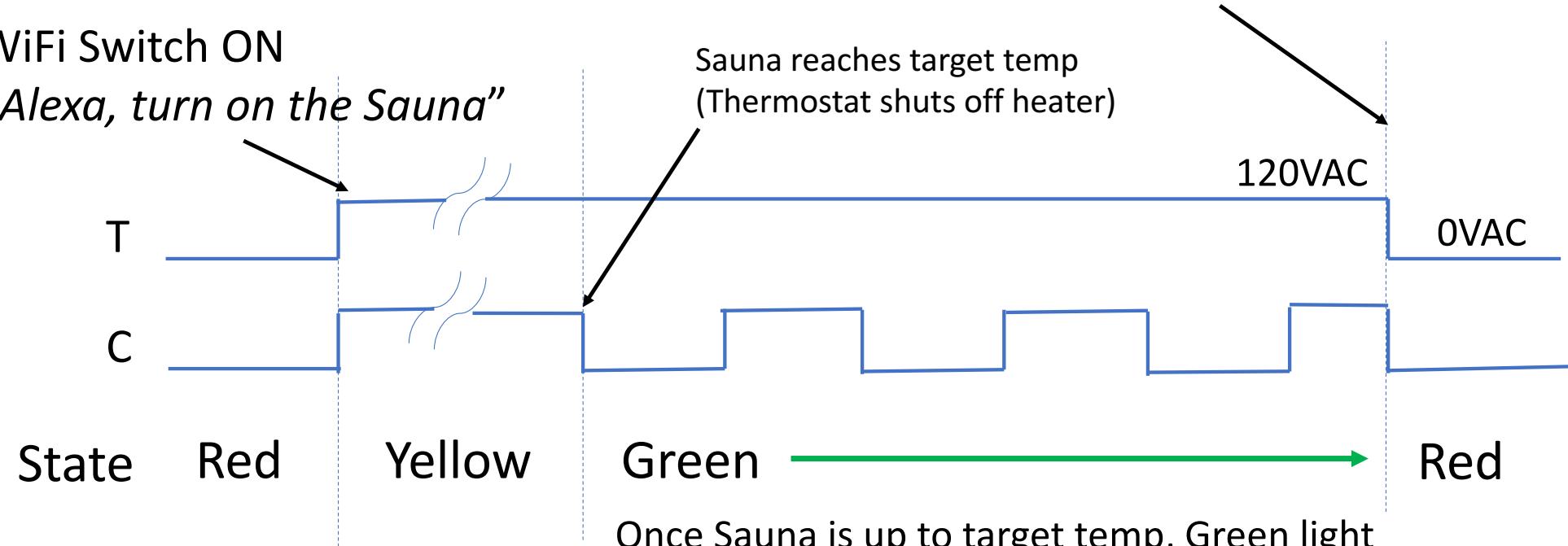
States reflect color
of light lit while in
a given state



State Simulation

WiFi Switch ON

"Alexa, turn on the Sauna"



"Alexa, turn off the Sauna"

Sauna reaches target temp
(Thermostat shuts off heater)

120VAC

0VAC

State

Red

Yellow

Green

Red

Once Sauna is up to target temp, Green light stays on even as thermostat cycles on/off until sauna is shut off by WiFi switch or manually.

Components for WiFi Control

https://www.amazon.com/gp/product/B07HGW8N7R/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&th=1

Components for Sauna Signaling

| quantity | Part number | Description | Price | As of |
|----------|------------------|---------------------------------------------------|-------------|---------|
| 4 EACH | 46.52.8.120.0040 | FINDER MIN. INDUSTRIAL RELAY DPDT 8A 120V AC | \$6.94 each | 9/17/21 |
| 4 EACH | 97.02 | FINDER DIN -RAIL/PANEL MOUNT SCREW TERMINAL (BOX) | \$4.13 each | 9/17/21 |

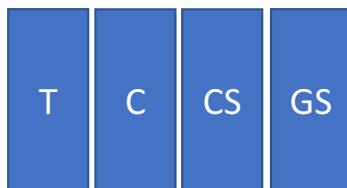
Available from many sources

External lights – 120V AC compatible Red, Yellow, Green – or any colors of your choice)

An example: https://www.amazon.com/gp/product/B07FXCGDDX/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1

Relay implementation of Sauna Signaling State machine

- 4 Relays
 - T – activated when signal T arrives - SPDT
 - C – activated when signal C arrives - DPDT
 - C-Save – Saves the prior state of relay C - DPST
 - G-Save – Saves the prior state of relay G - DPDT

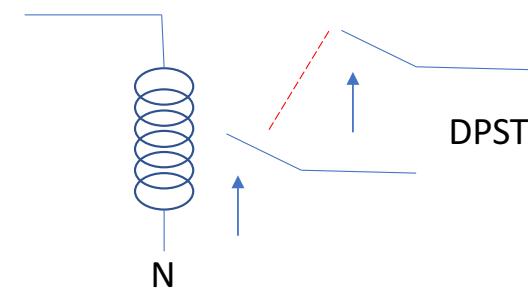
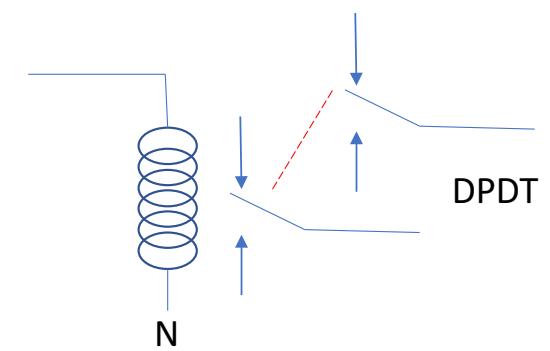
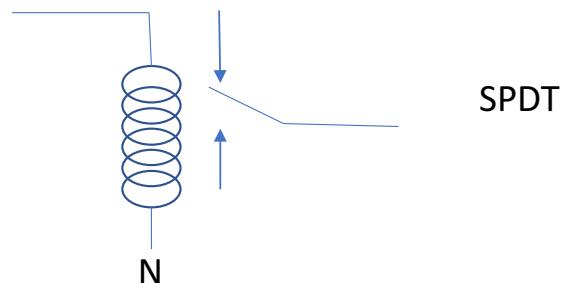


SPDT = Single Pole Double Throw

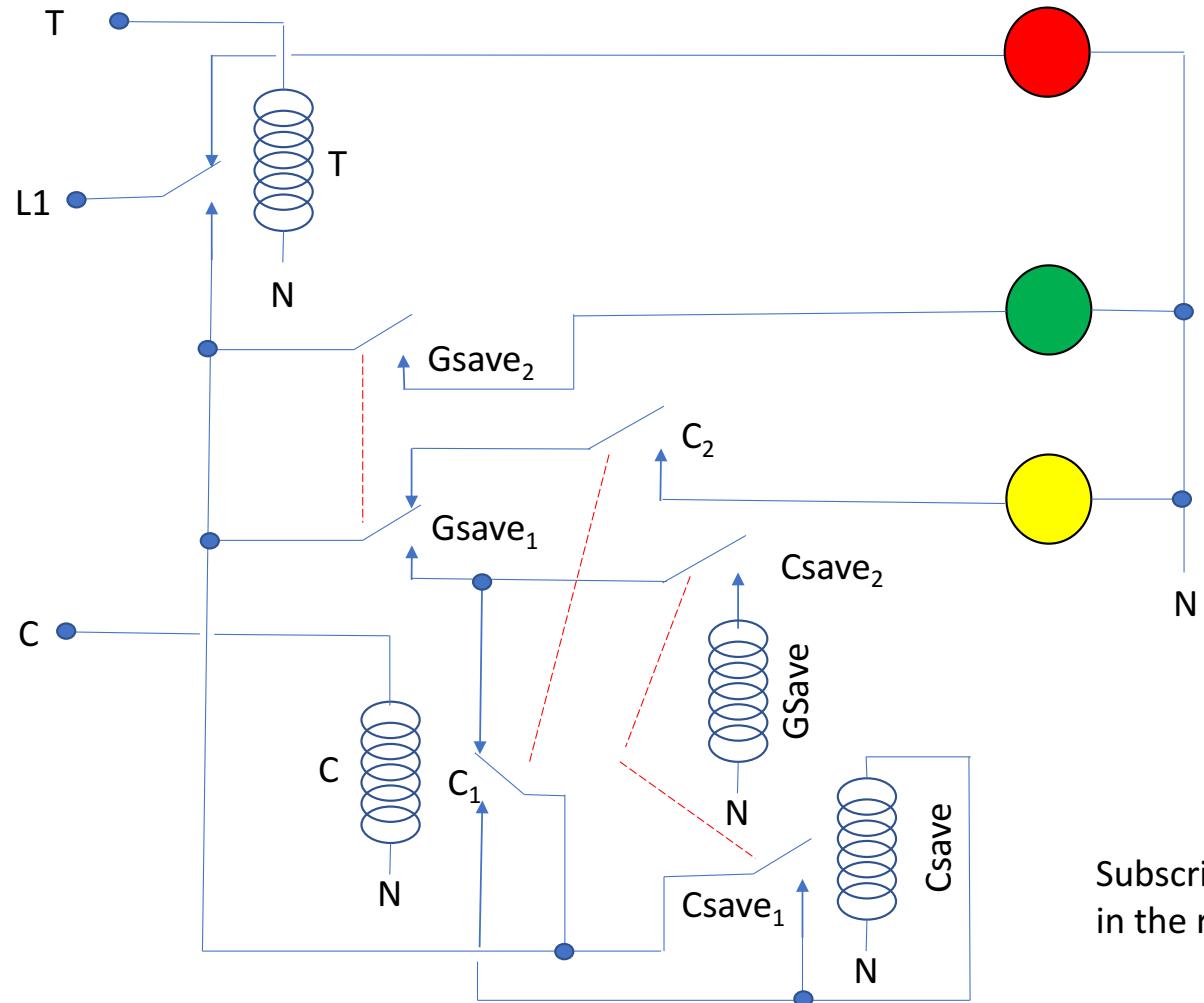
DPDT= Double Pole Double Throw

DPST = Double Pole Single Throw

All relays purchased are DPDT. A subset of connections are used for SPDT and DPST cases.



Relay Implementation



Lights are 120 VAC lights
Example:

Subscripts (e.g., G_{Save}_2) refer to which pole
in the relay is used

Pictures of implementation



Original Controller
F-1T Finlandia

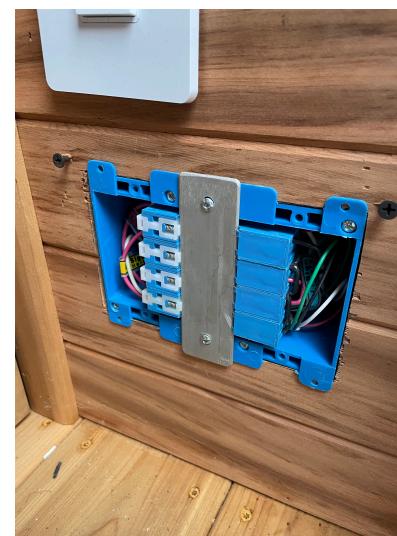
WiFi Switch and panel covering relays.
Low on wall between changing room and hot room – never hot there.
Controlled by Alexa or manually operating switch.



Finlandia 6KW heater



Relays wired in wall and wired to WiFi switch (T) and heater thermostat (C).



Drives 120VAC to selected light outside.

And it works!

