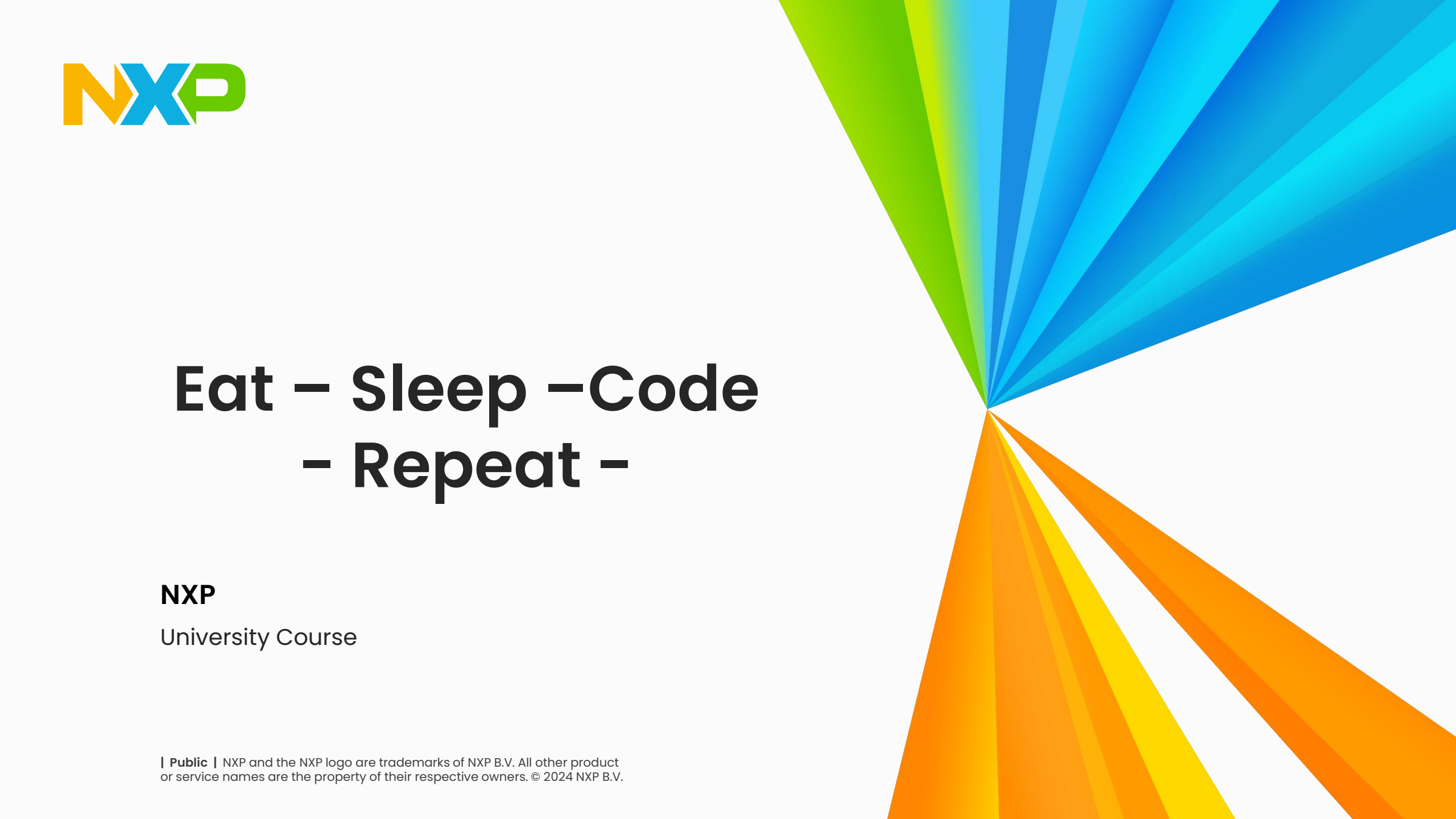

Eat – Sleep –Code - Repeat -

NXP

University Course

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Course Contents

General topics, Courses & Labs

1. General Presentation of the Course
2. V-Model, Requirements Engineering, Process | Understand and Create Requirements
3. Architecture (UML) | Virtual Machine Environment Setup
4. Process | Git, IDE Setup, Compile and Flash the Hello World Project
5. How Hardware and Software are Linked | From Compiling to Electrical Signals and Debugging
6. Microcontroller Features (I/O, PWM, ADC, DAC, Timer, Interrupts) | Hands-on Lab (no module – just the dev board)
7. Node 1: Lights (BCM)
8. Node 2: Steering
9. Node 3: Transmission
10. Node 4: Brakes
11. Node 5: Door Control + HVAC
12. Node 6: HMI and CAN Communication

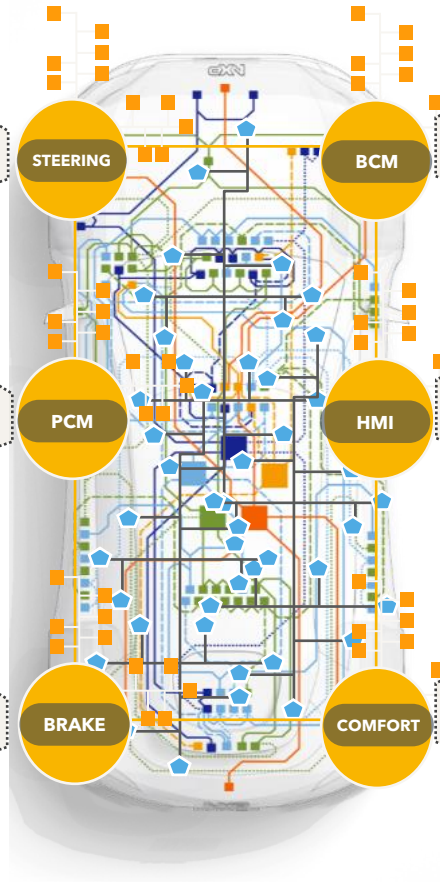
Notes and sources

REPLI-CAR NETWORK

STEERING CONTROL NODE
Replicate Steering Control Module behavior
· steer base on input controller (steer controller) from HMI
· Communications with other nodes: HMI, PCM, BCM

POWERTRAIN CONTROL NODE
Replicate Engine and Transmission Modules behavior
· Accelerate/Decelerate based on input controller from HMI
· Communications with other nodes: HMI, Brake, BCM

BRAKE CONTROL NODE
Replicate Brake Control Module behavior
· brake actuation and brake lamp indication based on input controller from HMI
· Communications with other nodes: HMI, PCM, BCM



BODY CONTROL NODE
Replicate Body Control Module behavior
· Actuate lights (headlamps, turn indicators), horn and washer pump based on input controller from HMI
· Communications with other nodes: HMI, PCM, Brake, Steering, Comfort

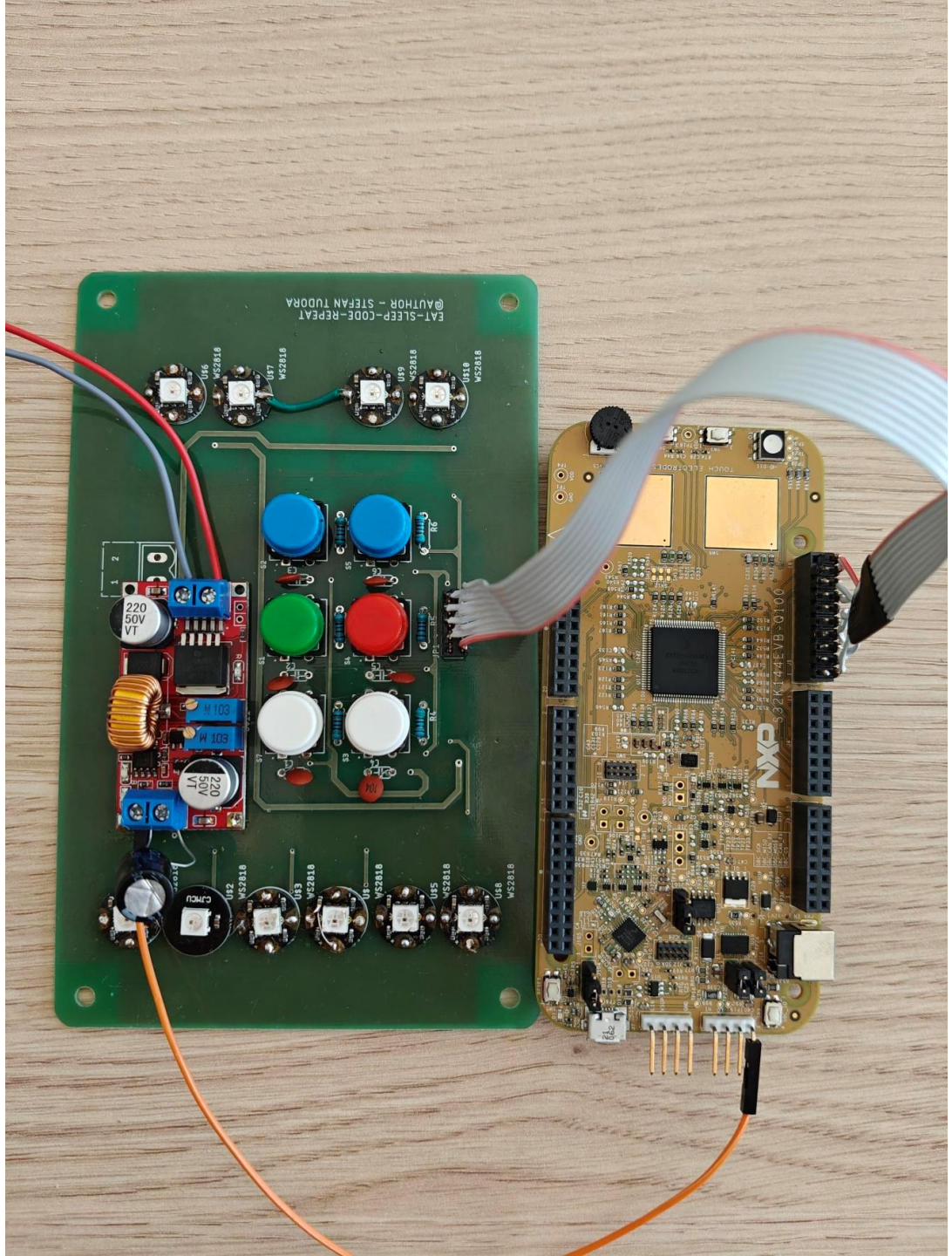
HMI NODE
Replicate Human Machine Interface Module behavior
· handle input/output controllers that actuate different nodes in Repli-Car network. Display information received from the nodes
· Communications with other nodes: Steering, Comfort, PCM, BCM

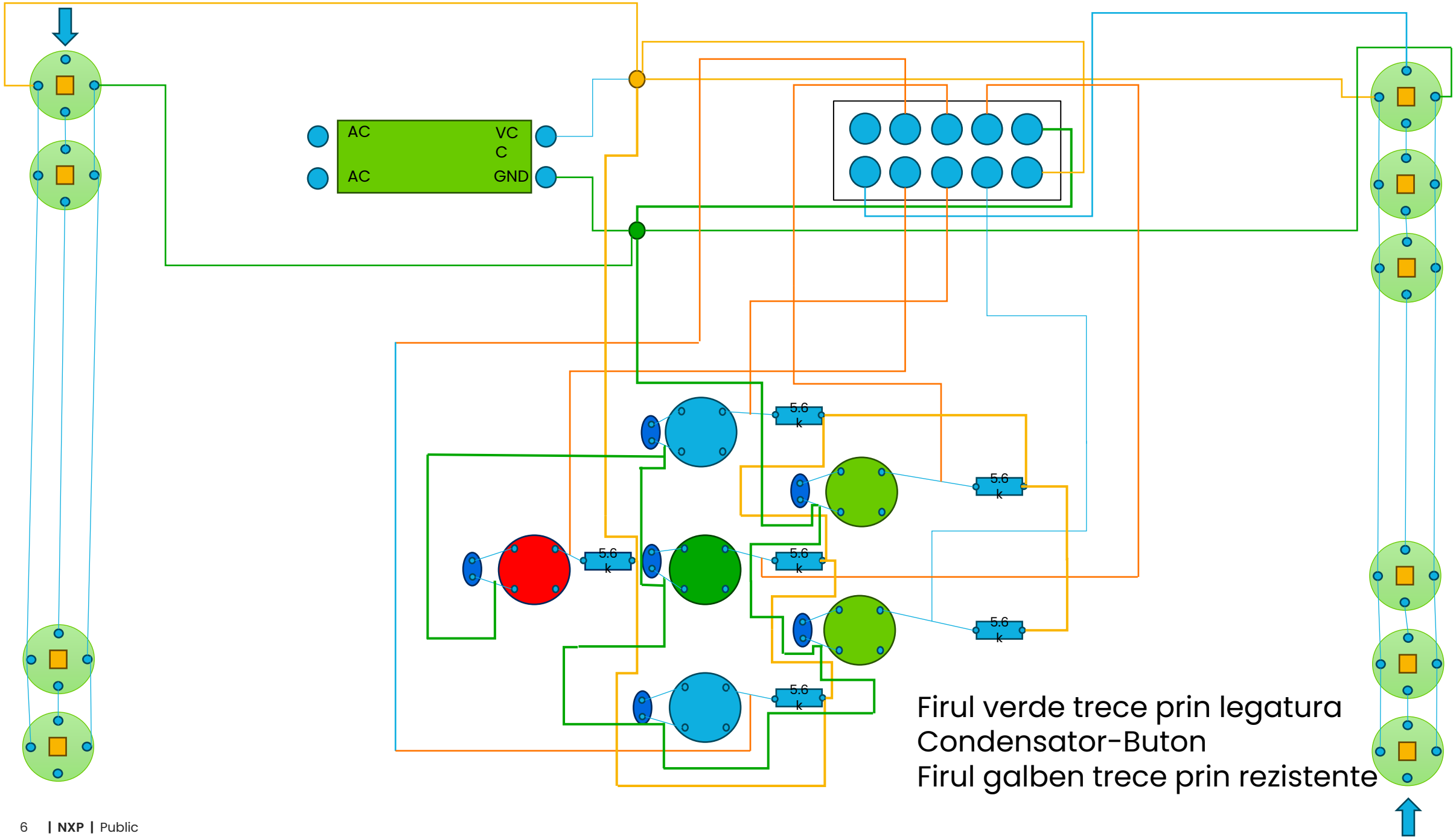
COMFORT CONTROL NODE
Replicate Comfort Module behavior
· actuate window motor and ventilator using input controller commands from HMI
· Communications with other nodes: HMI, BCM

01

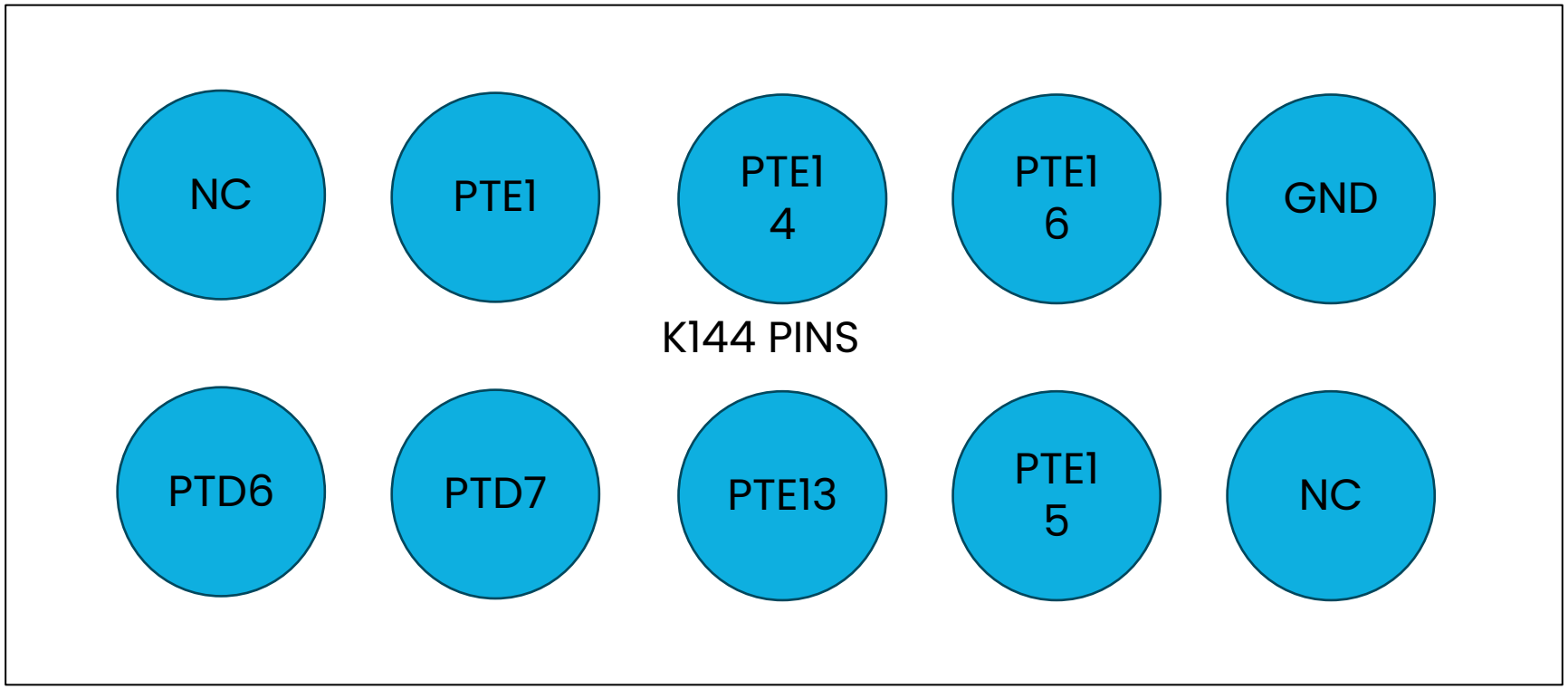
Lights (BCM)

LIGHTS





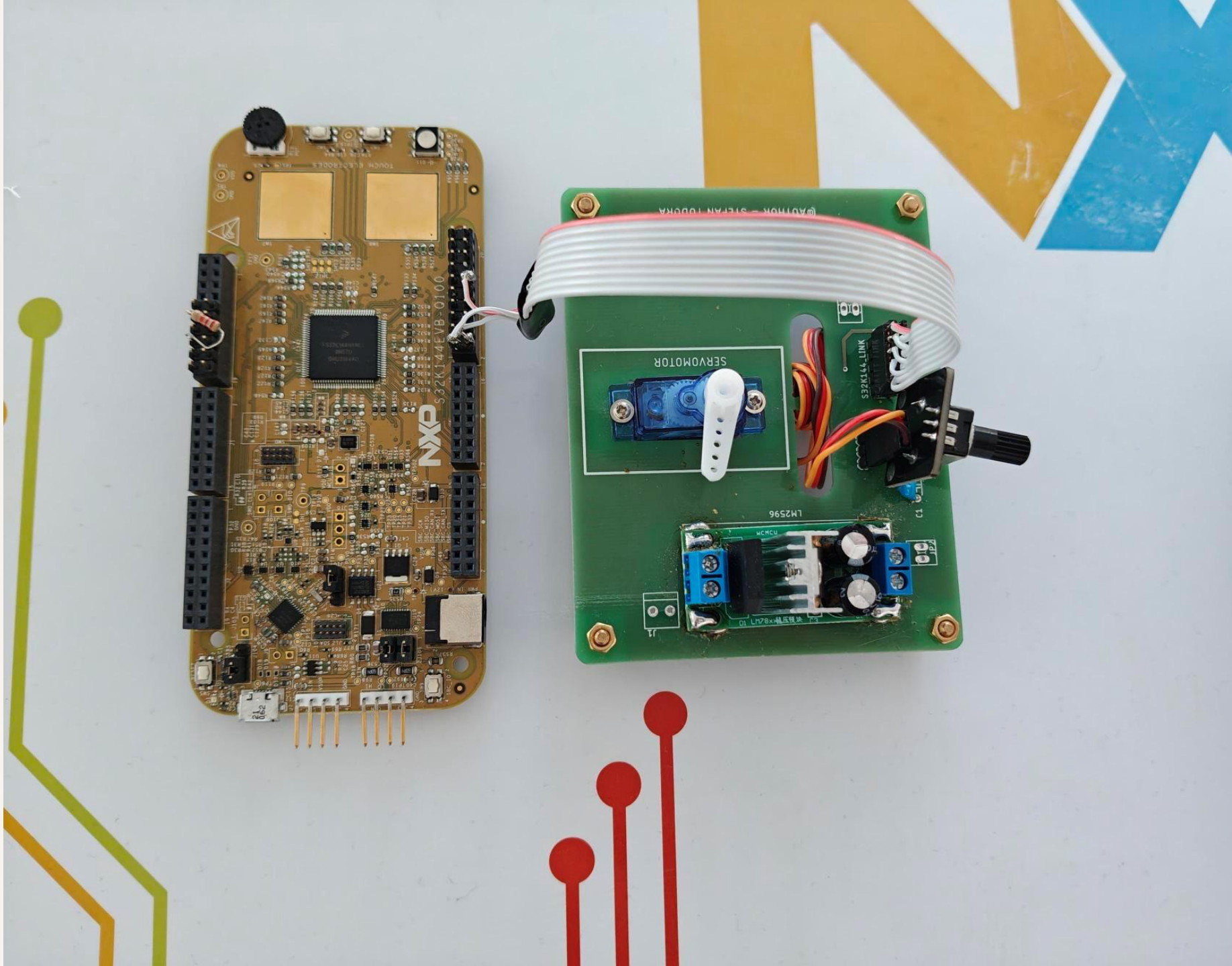
Firul verde trece prin legatura
Condensator-Buton
Firul galben trece prin rezistente

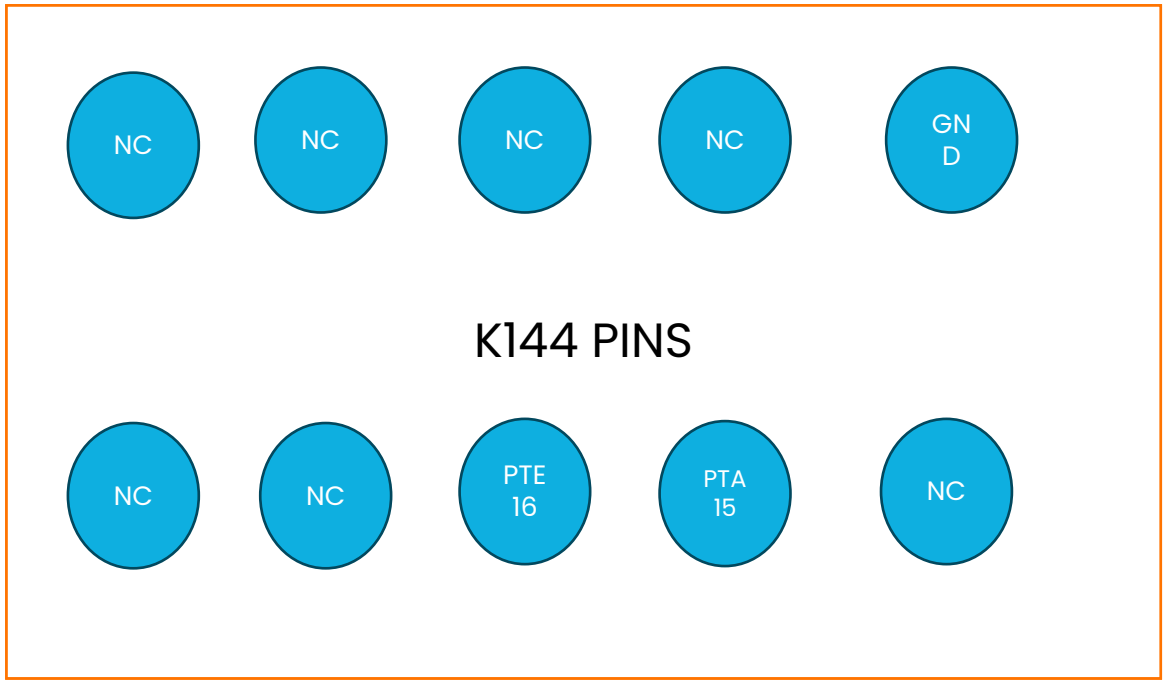

NC
PTE1
PTE14
PTE16
GND
K144 PINS
PTD6
PTD7
PTE13
PTE15
NC

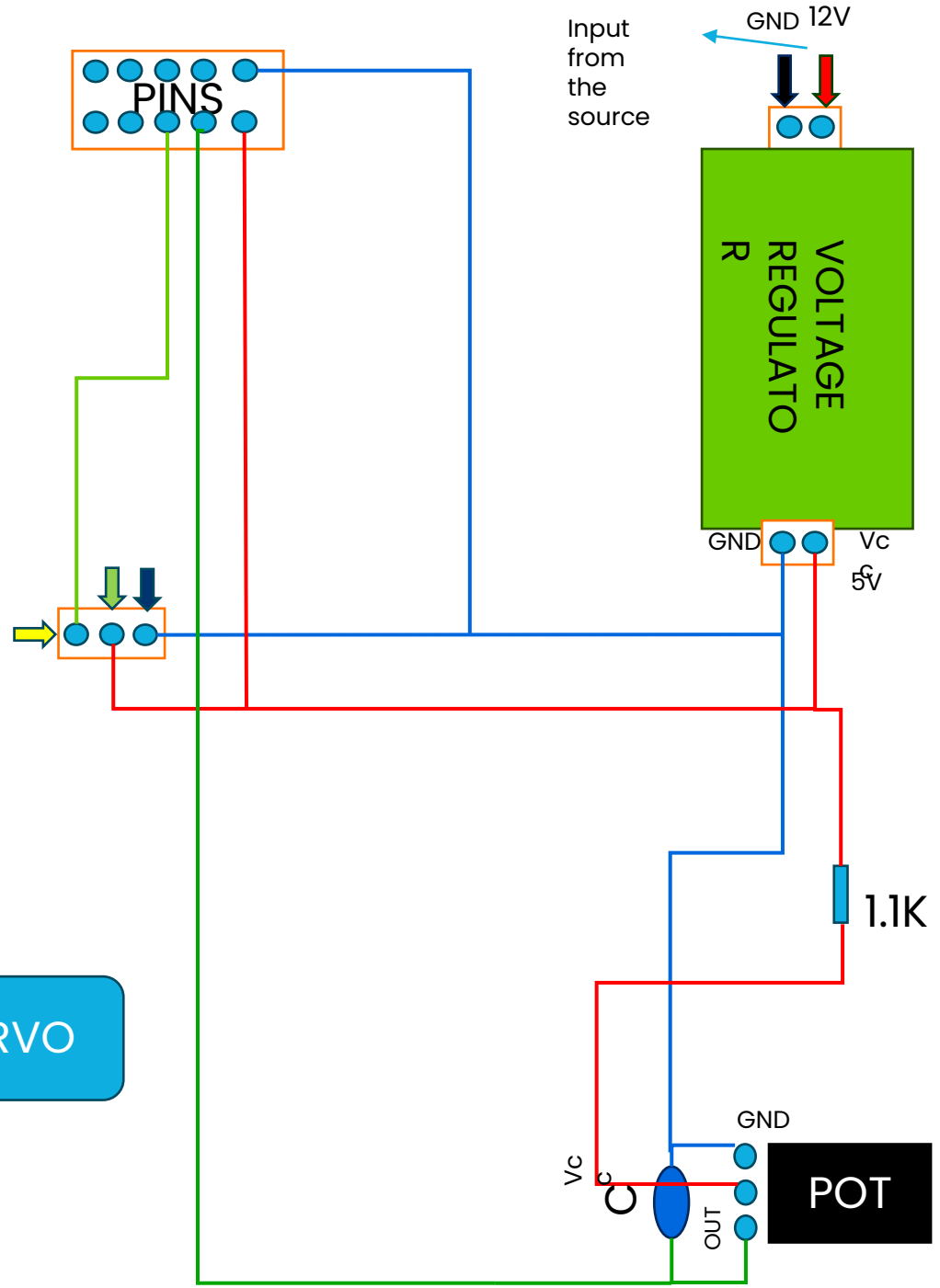
02

Steering

STEERING





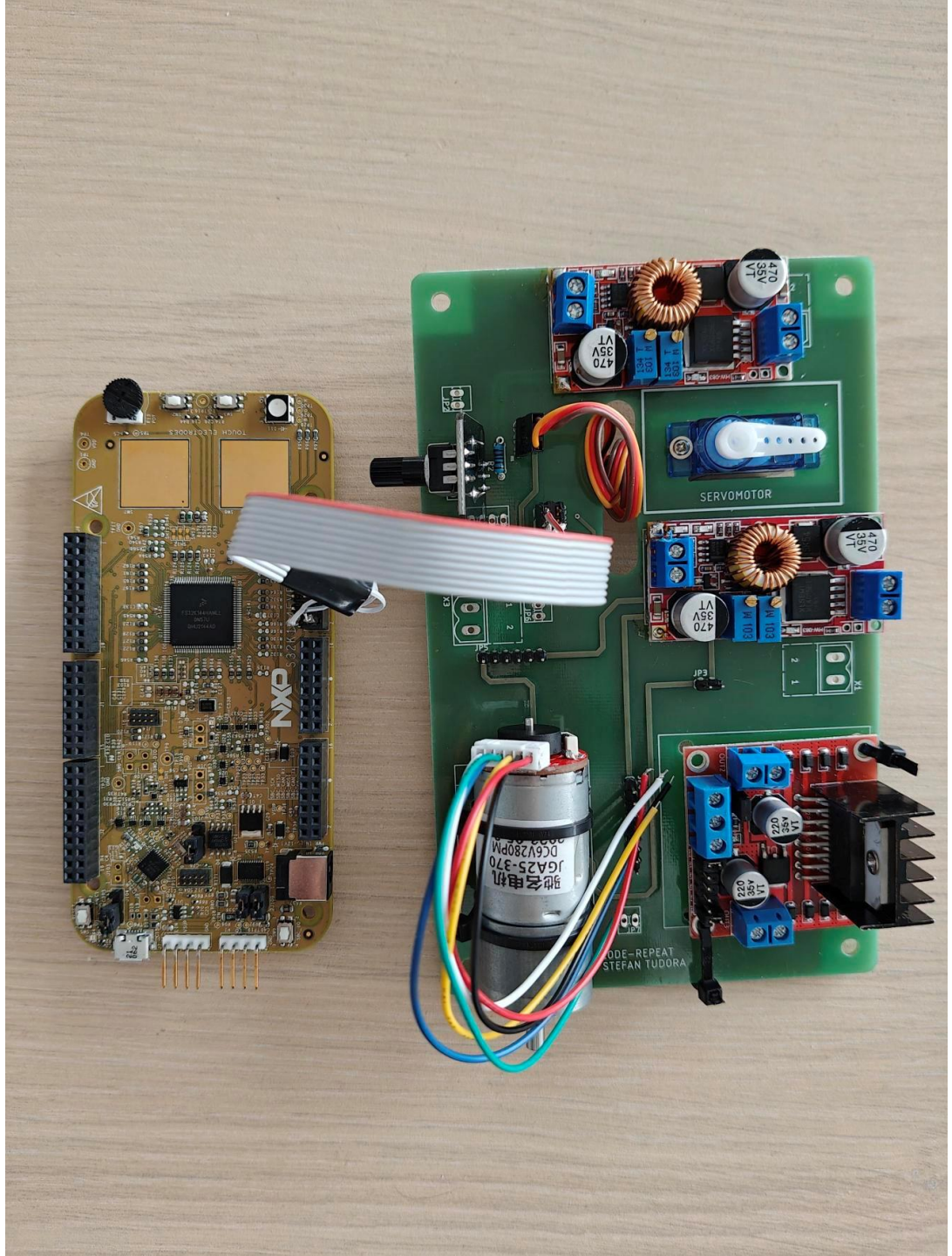


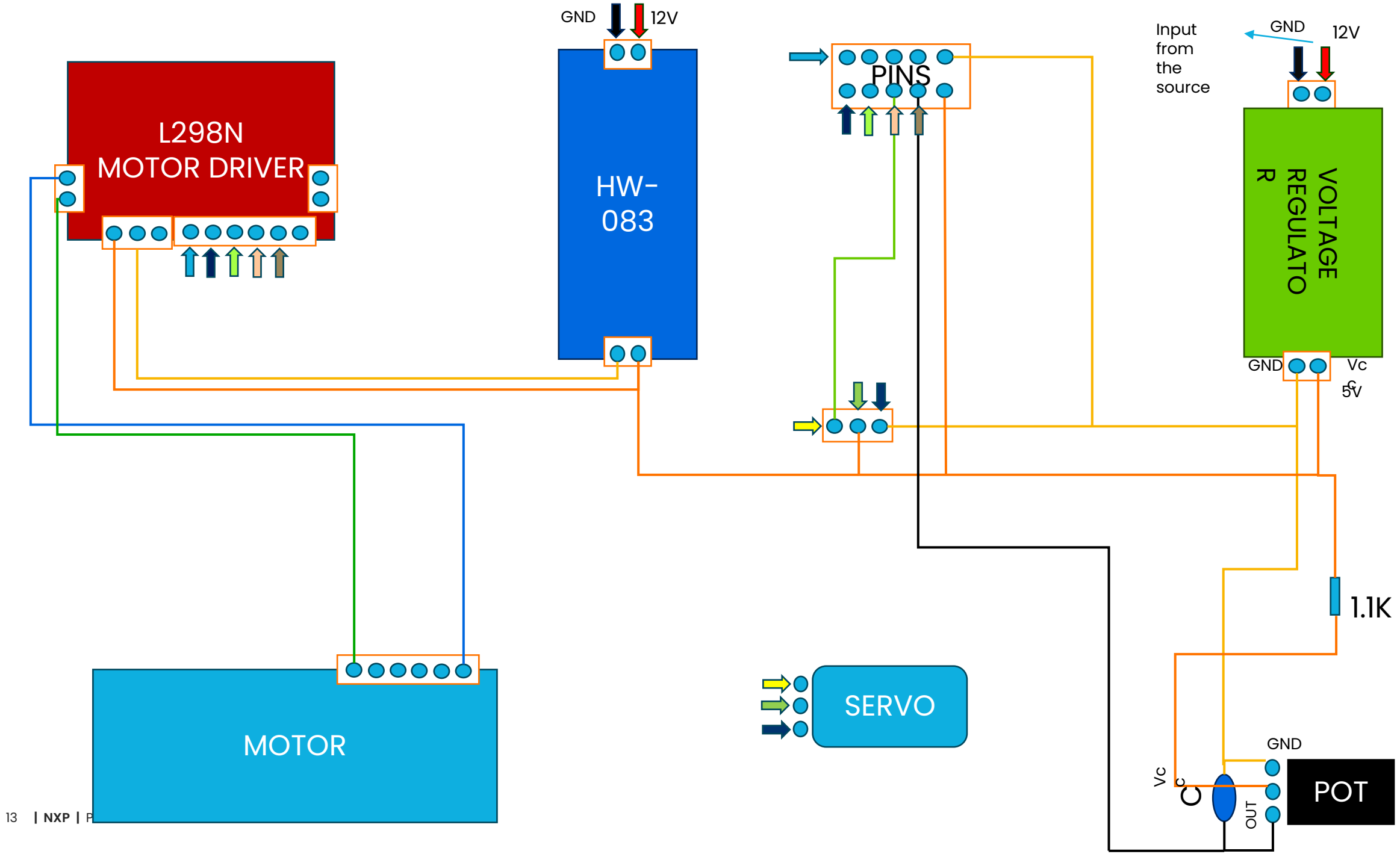
Matching arrow colors means a wire connection

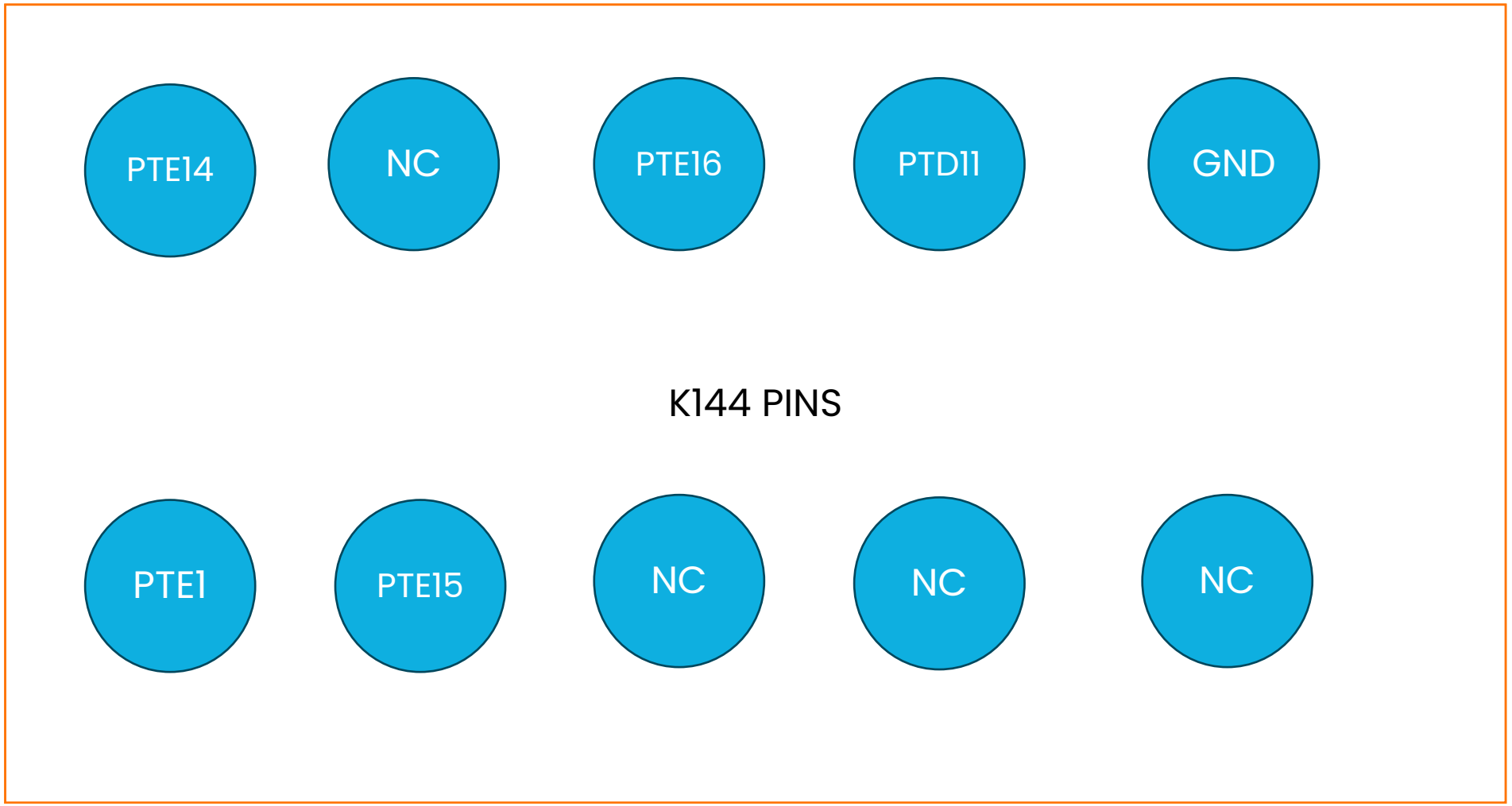
03

Transmission

TRANSMISSION



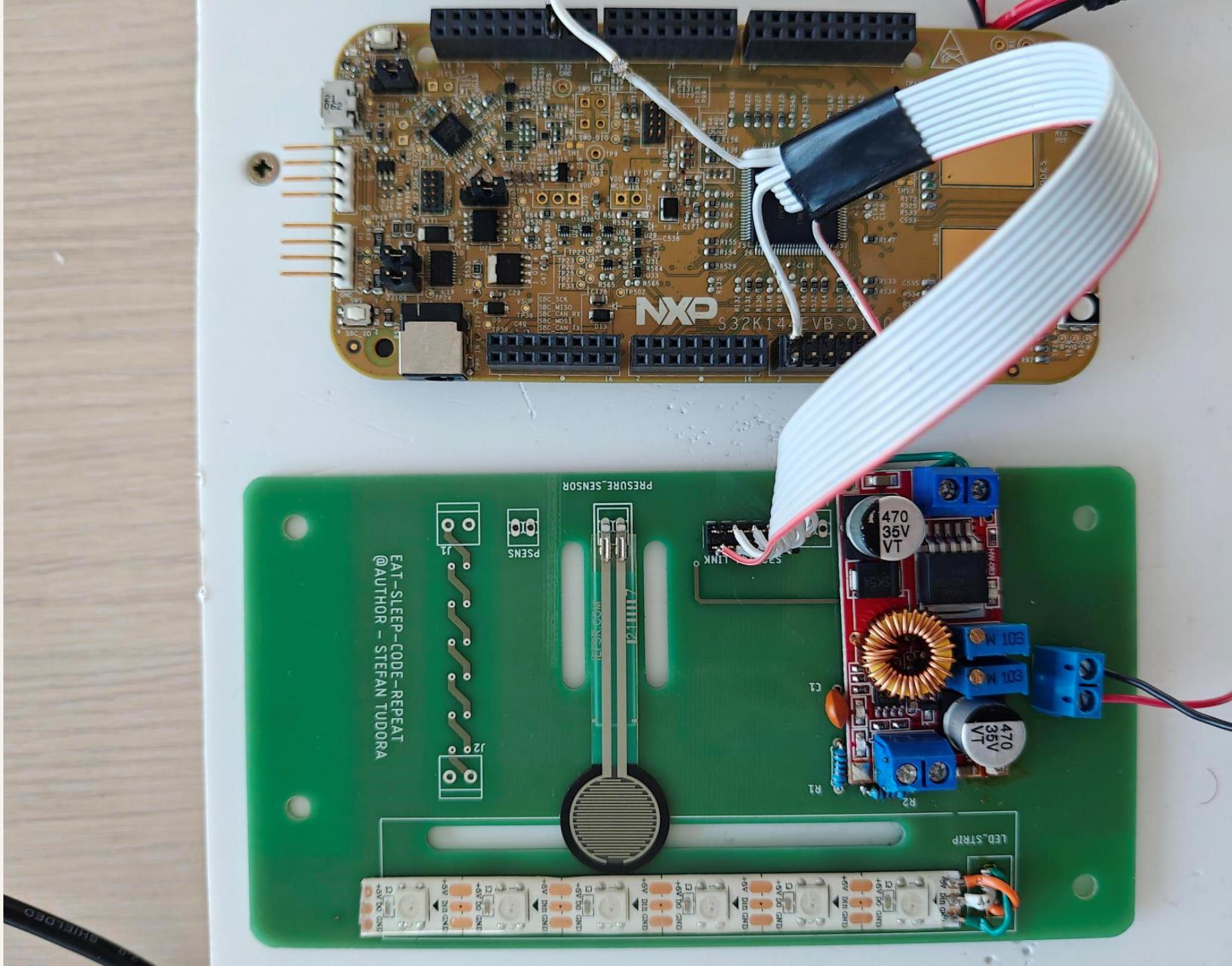

L298N
MOTOR DRIVER
GND
12V
HW-
083
PINS
Input
from
the
source
GND
12V
VOLTAGE
REGULATO
R
GND
Vc
5V
1.1K
MOTOR
SERVO
GND
Vc
OUT
POT

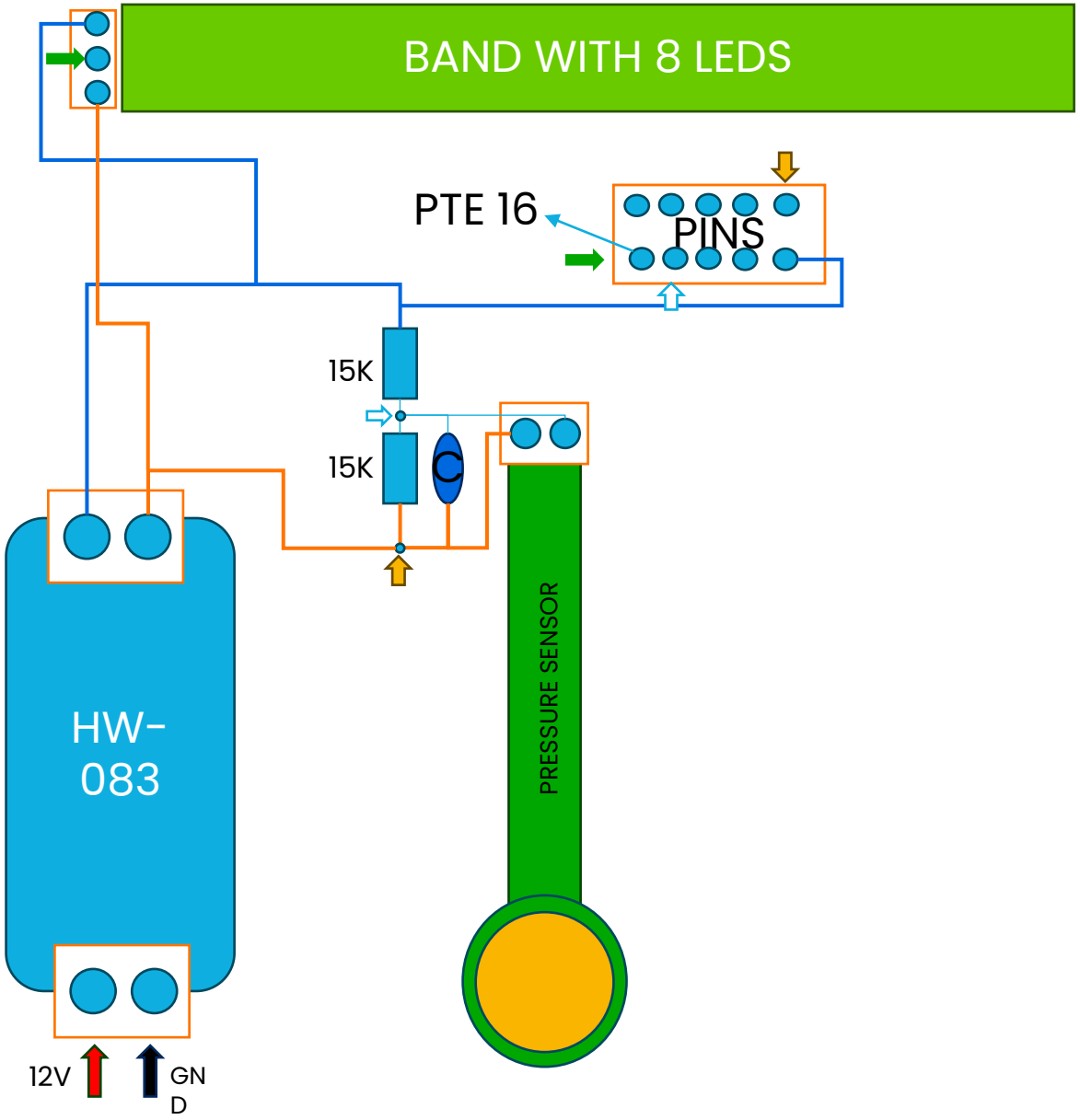

PTE14
NC
PTE16
PTD11
GND
K144 PINS
PTE1
PTE15
NC
NC
NC

04

Brake

BRAKE

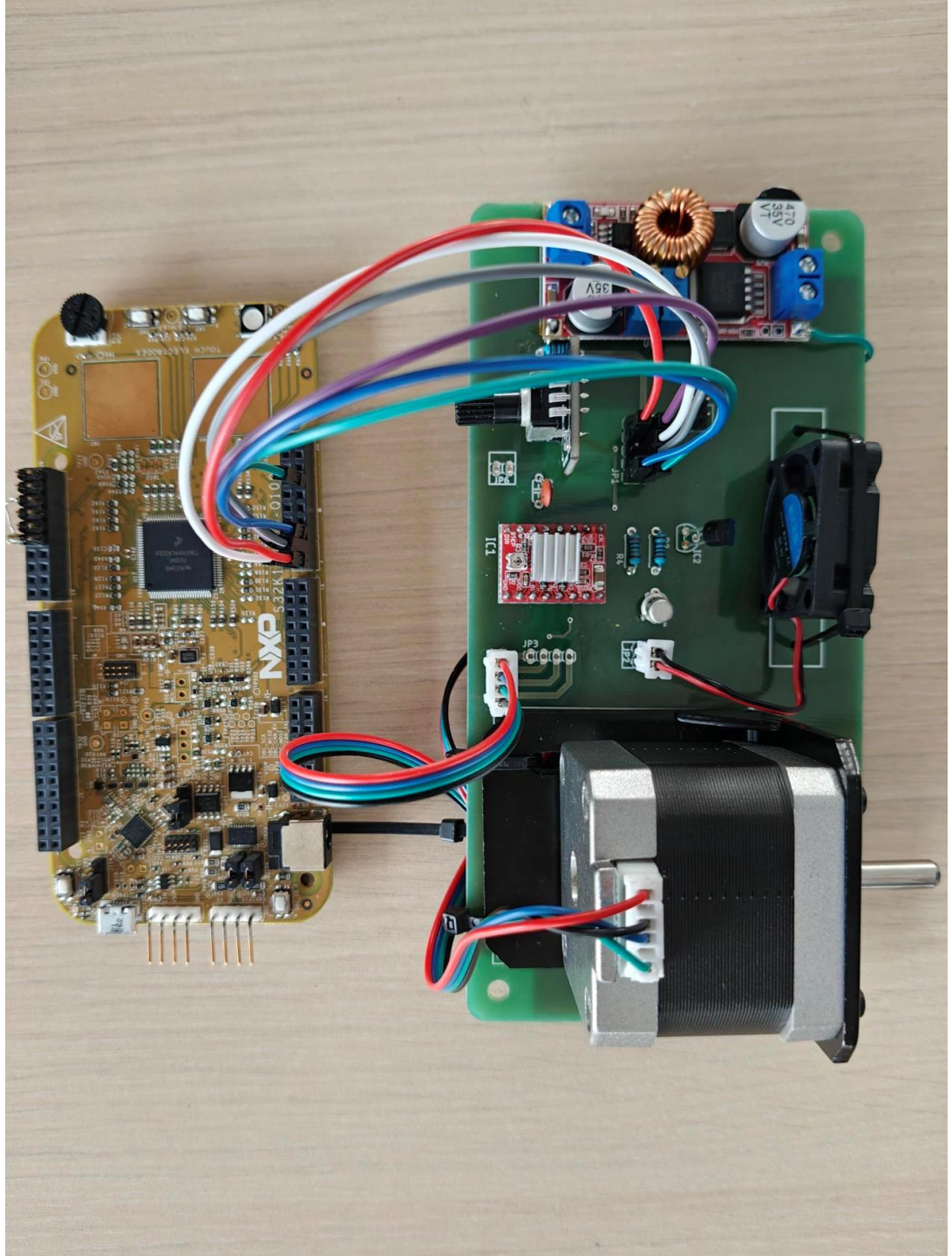

NXP
S32K144EVB-Q100
PRESURE_SENSOR
PSENS
J1
J2
EAT-SLEEP-CODE-REPEAT
@AUTHOR - STEFAN TUDORA
470
35V
VT
LED_STRIP

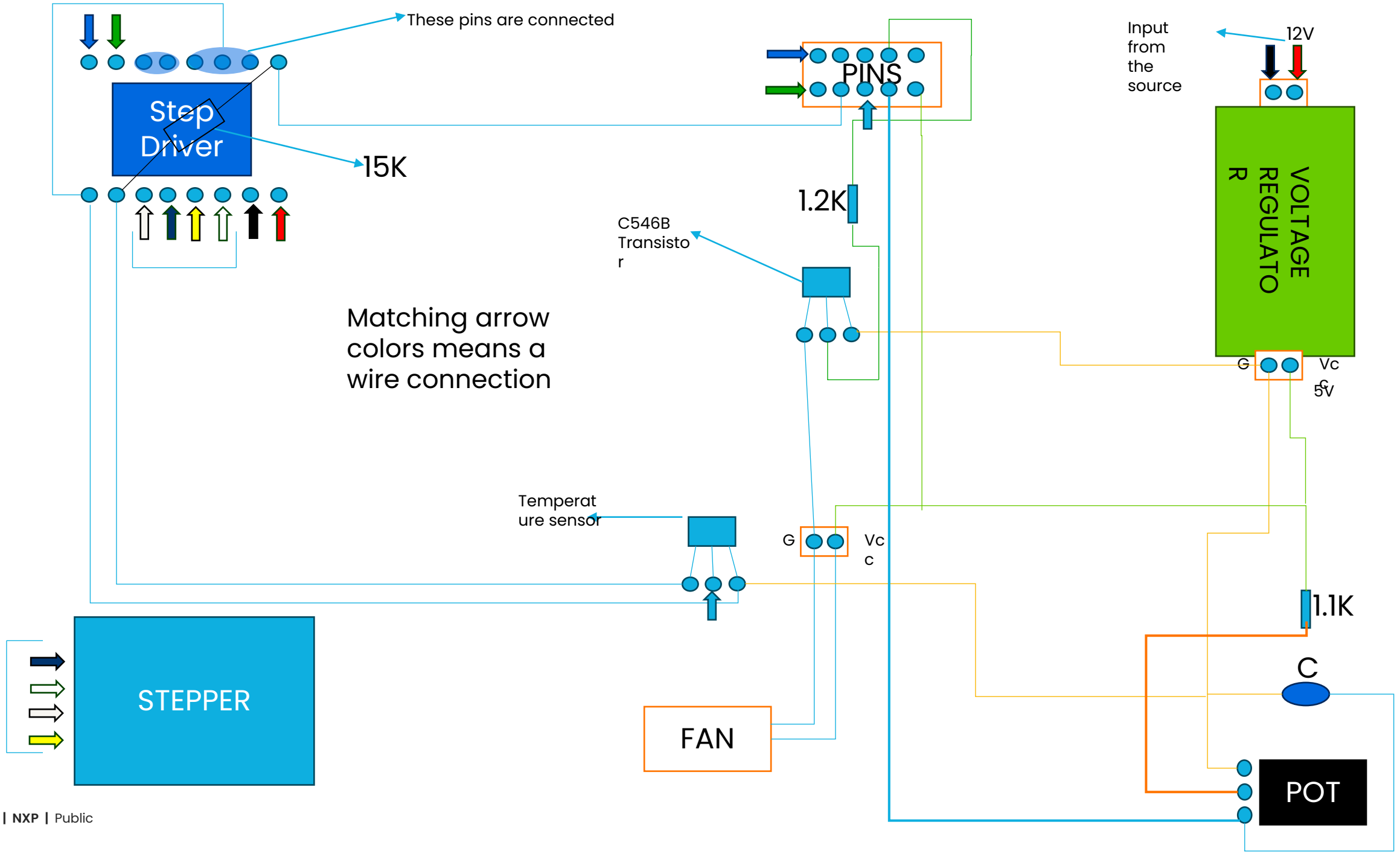

BAND WITH 8 LEDS
PTE 16
PINS
15K
15K
C
HW-
083
PRESSURE SENSOR
12V
GN
D

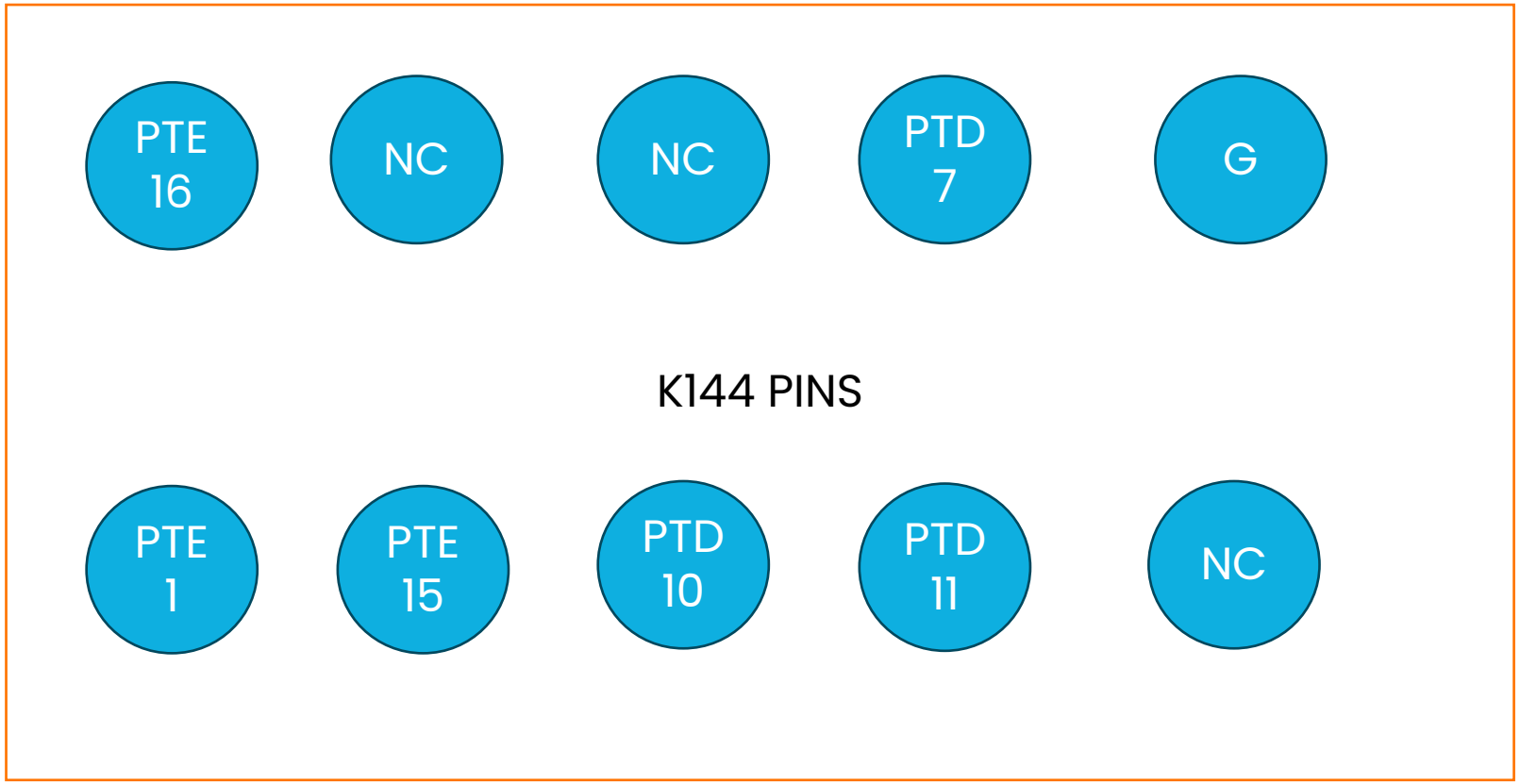
05

Door Control + HVAC

DOOR Control + HVAC



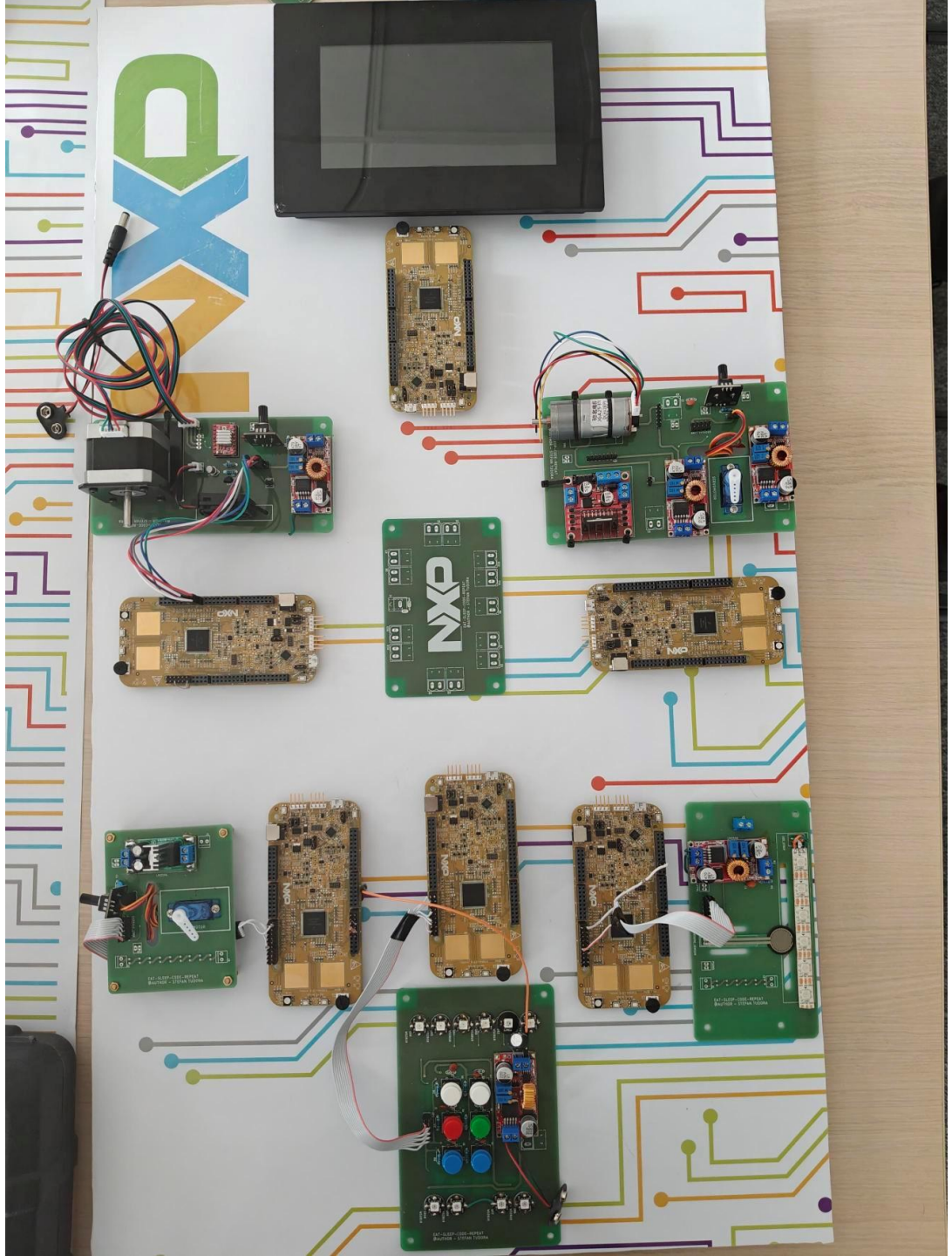

These pins are connected
Step Driver
15K
PINS
1.2K
C546B Transistor
Matching arrow colors means a wire connection
Input from the source
12V
VOLTAGE REGULATOR
G
Vc
c
5V
Temperature sensor
G
Vc
c
1.1K
C
STEPPER
FAN
POT


PTE 16
NC
NC
PTD 7
G
K144 PINS
PTE 1
PTE 15
PTD 10
PTD 11
NC

04

FINAL SETUP

FINAL SETUP



Brighter
Together

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