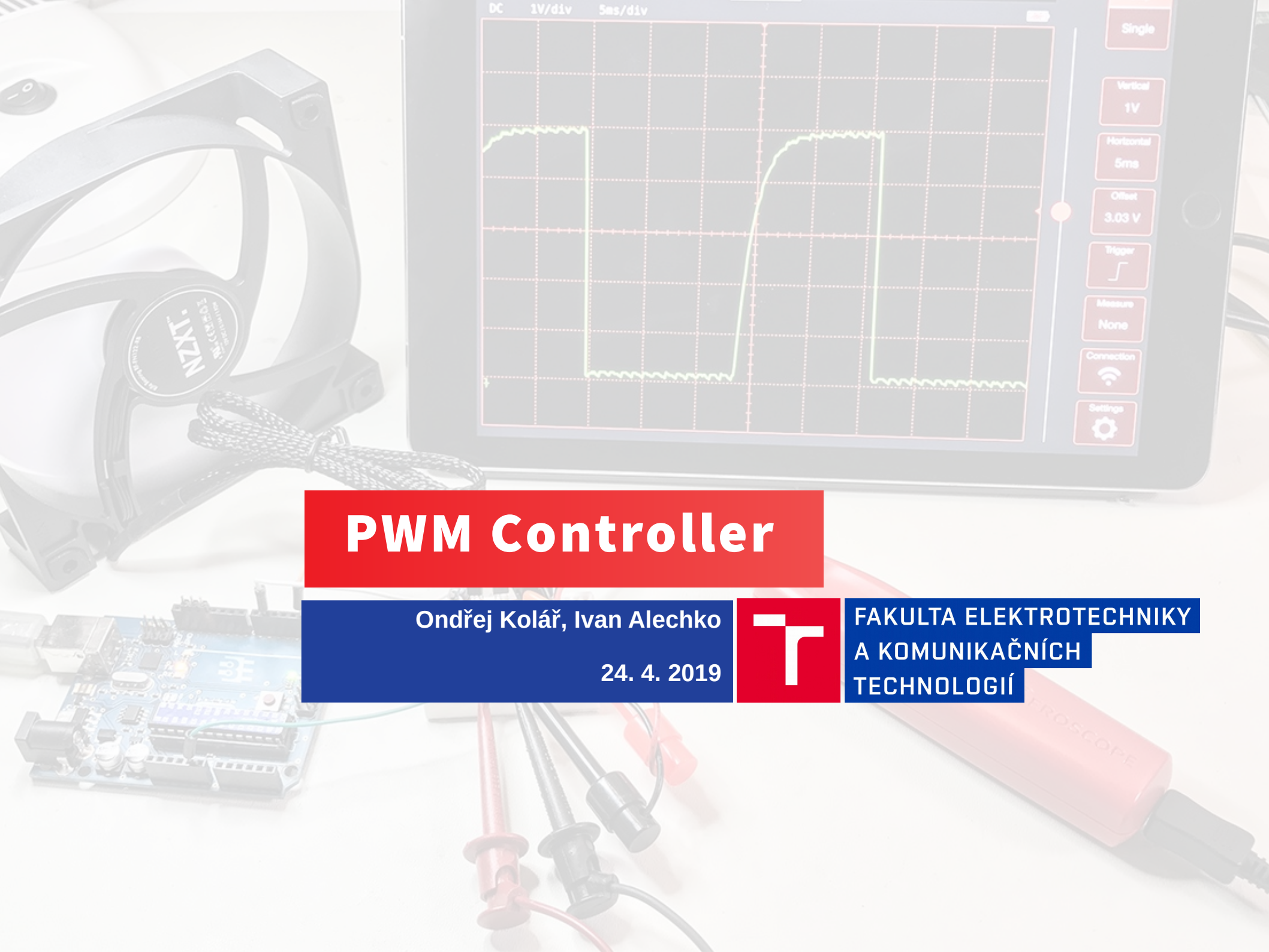


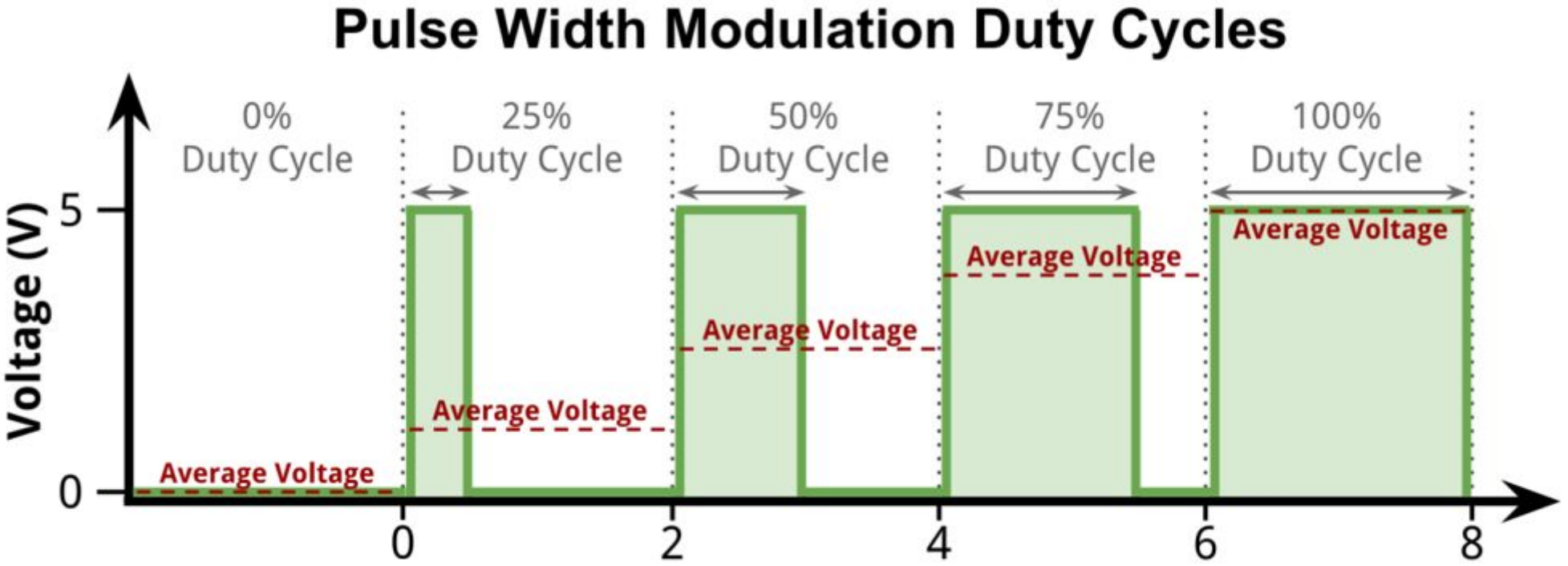
PWM Controller

Ondřej Kolář, Ivan Alechko

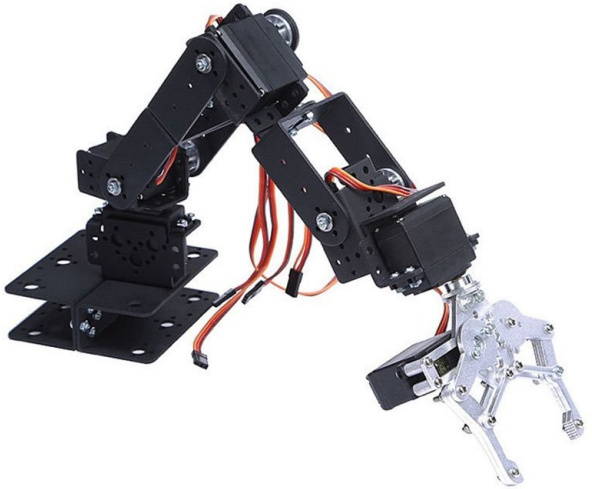
24. 4. 2019

FAKULTA ELEKTROTECHNIKY
A KOMUNIKAČNÍCH
TECHNOLOGIÍ

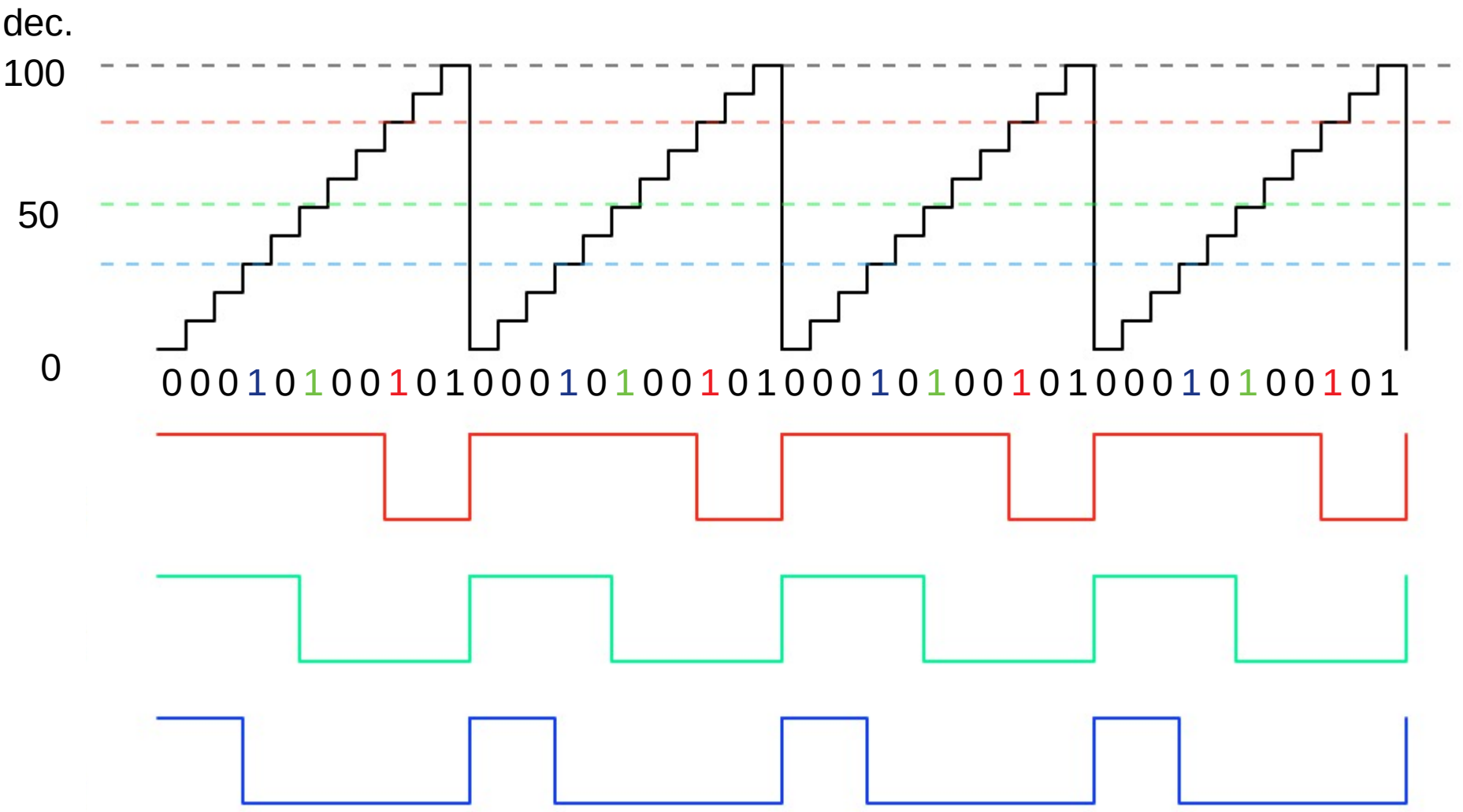
What is PWM?


Pulse Width Modulation Duty Cycles
0% Duty Cycle
25% Duty Cycle
50% Duty Cycle
75% Duty Cycle
100% Duty Cycle
Voltage (V)
5
0
Average Voltage
Average Voltage
Average Voltage
Average Voltage
Average Voltage
0
2
4
6
8

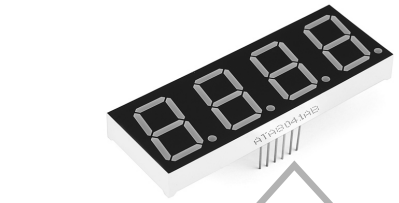
DIMMER
OFF
ON



The basic idea



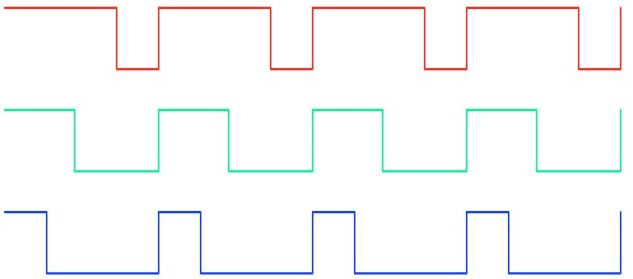
Task

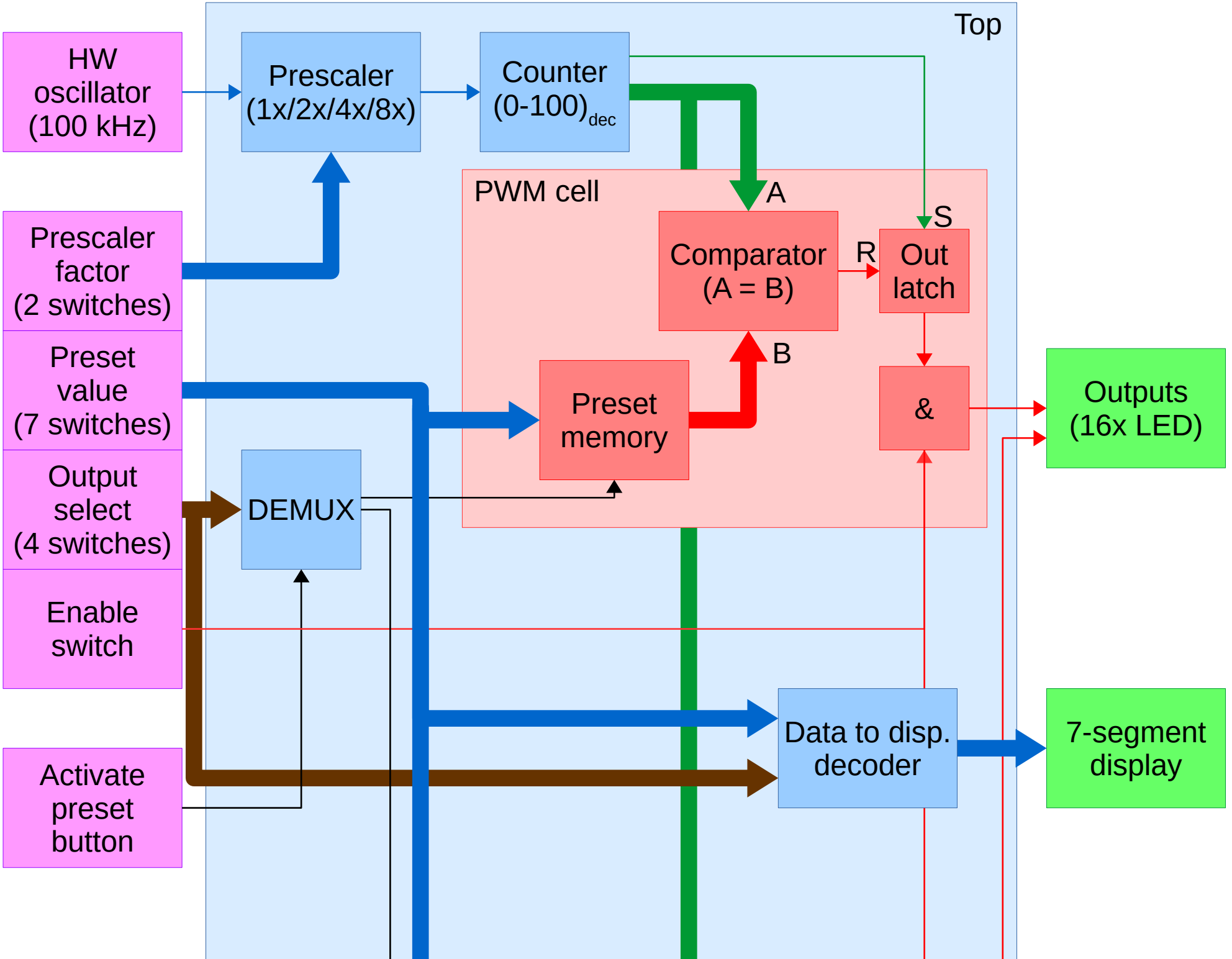


PWM controller

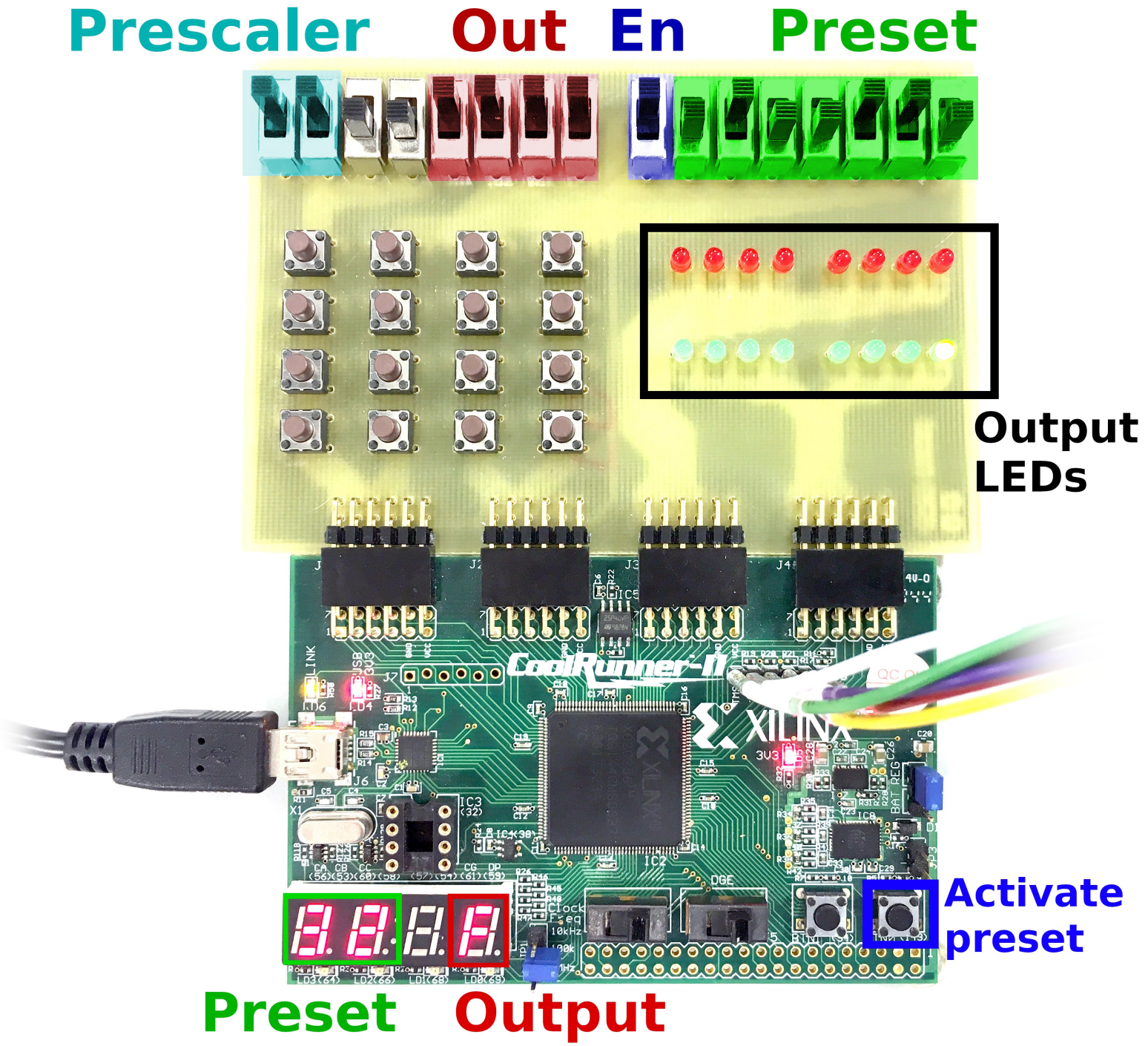
Input data: duty cycle (0-100%),
frequency prescale factor,
ouput pin select

PWM outputs up to 16
signal outputs




Top
HW oscillator (100 kHz)
Prescaler (1x/2x/4x/8x)
Counter (0-100)dec
PWM cell
A
S
Comparator (A = B)
R
Out latch
B
Prescaler factor (2 switches)
Preset value (7 switches)
Preset memory
&
Outputs (16x LED)
Output select (4 switches)
DEMUX
Enable switch
Data to disp. decoder
7-segment display
Activate preset button

Showcase


Prescaler
Out
En
Preset
Output LEDs
Activate preset
Preset
Output