Specificații proiect

# Specificații Microcontroller

Microcontroller-ul ales este un STM32F446RE

* Core: Arm® 32-bit Cortex®-M4 CPU with FPU, Adaptive real-time accelerator (ART Accelerator) allowing 0-wait state execution from Flash memory, frequency up to 180 MHz, MPU, 225 DMIPS/1.25 DMIPS/MHz (Dhrystone 2.1), and DSP instructions
* Memories
  + 512 Kbytes of Flash memory
  + 128 Kbytes of SRAM
  + Flexible external memory controller with up to 16-bit data bus: SRAM, PSRAM, SDRAM/LPSDR SDRAM, NOR/NAND Flash memories
  + Dual mode QuadSPI interface
* LCD parallel interface, 8080/6800 modes
* Clock, reset and supply management
  + 1.7 V to 3.6 V application supply and I/Os
  + POR, PDR, PVD and BOR
  + 4 to 26 MHz crystal oscillator
  + Internal 16 MHz factory-trimmed RC (1% accuracy)
  + 32 kHz oscillator for RTC with calibration
  + Internal 32 kHz RC with calibration
* Low power
  + Sleep, Stop and Standby modes
  + VBAT supply for RTC, 20×32 bit backup registers plus optional 4 KB backup SRAM
* 3× 12-bit, 2.4 MSPS ADC: up to 24 channels and 7.2 MSPS in triple interleaved mode
* 2× 12-bit D/A converters
* General-purpose DMA: 16-stream DMA controller with FIFOs and burst support
* Up to 17 timers: 2x watchdog, 1x SysTick timer and up to twelve 16-bit and two 32-bit timers up to 180 MHz, each with up to four IC/OC/PWM or pulse counter
* Debug mode
  + SWD and JTAG interfaces
  + Cortex®-M4 Trace Macrocell™
* Up to 114 I/O ports with interrupt capability
  + Up to 111 fast I/Os up to 90 MHz
  + Up to 112 5 V-tolerant I/Os
* Up to 20 communication interfaces
  + SPDIF-Rx
  + Up to 4× I2C interfaces (SMBus/PMBus)
  + Up to four USARTs and two UARTs (11.25 Mbit/s, ISO7816 interface, LIN, IrDA, modem control)
  + Up to four SPIs (45 Mbits/s), three with muxed I2S for audio class accuracy via internal audio PLL or external clock
  + 2x SAI (serial audio interface)
  + 2× CAN (2.0B Active)
  + SDIO interface
  + Consumer electronics control (CEC) I/F
* Advanced connectivity
  + USB 2.0 full-speed device/host/OTG controller with on-chip PHY
  + USB 2.0 high-speed/full-speed device/host/OTG controller with dedicated DMA, on-chip full-speed PHY and ULPI
  + Dedicated USB power rail enabling on-chip PHYs operation throughout the entire MCU power supply range
* 8- to 14-bit parallel camera interface up to 54 Mbytes/s
* CRC calculation unit
* RTC: subsecond accuracy, hardware calendar
* 96-bit unique ID

# Specificații sensor TCS34725

* Working voltage: 3VDC – 5VDC
* Operating current: 15mA
* Measuring range: RGB 0 – 255
* Frequency: 10 Hz
* Working temperature: -20° ~ 85°
* Dimensions: 24.3mm x 26.7mm

# Specificații modul Bluetooth HC-05

* Typical ‐80dBm sensitivity.
* Up to +4dBm RF transmit power.
* Operating Voltage: 3.3V to 5 V.
* Range: < 100m.
* PIO (Programmable Input/Output) control.
* UART interface with programmable baud rate.
* Integrated antenna.