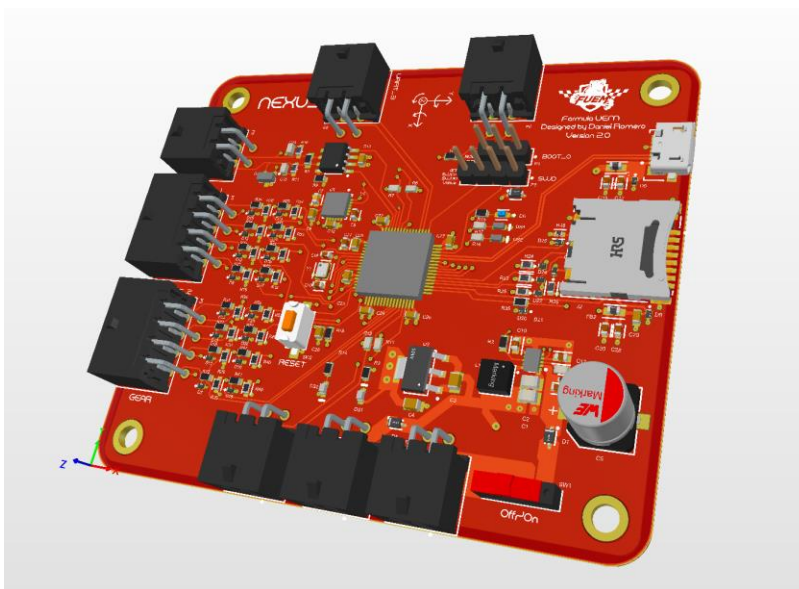


Formula UEM NEXUS

Designed by Daniel Romero de avila 2024



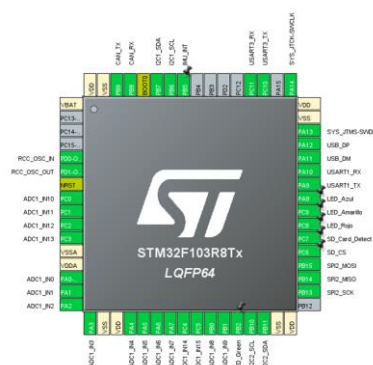
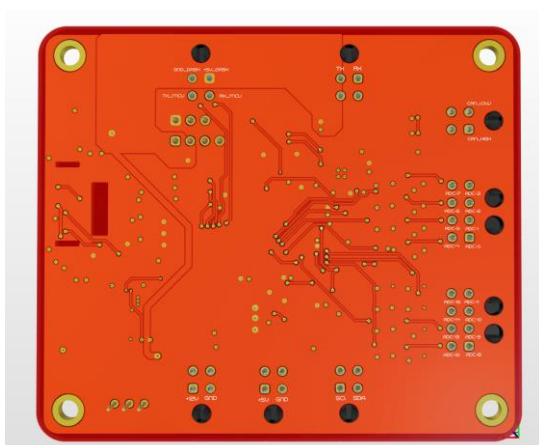
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1. Overview

- 12V and 5V Power Supply
- STM32F103R8T6 Microcontroller
- Data Acquisition by SD Card
- Dashboard Power Supply
- IMU and Gyroscope 6 Axis MPU-6050
- 16 ADC 12 bit resolution
- I2C
- 2x UART
- USB

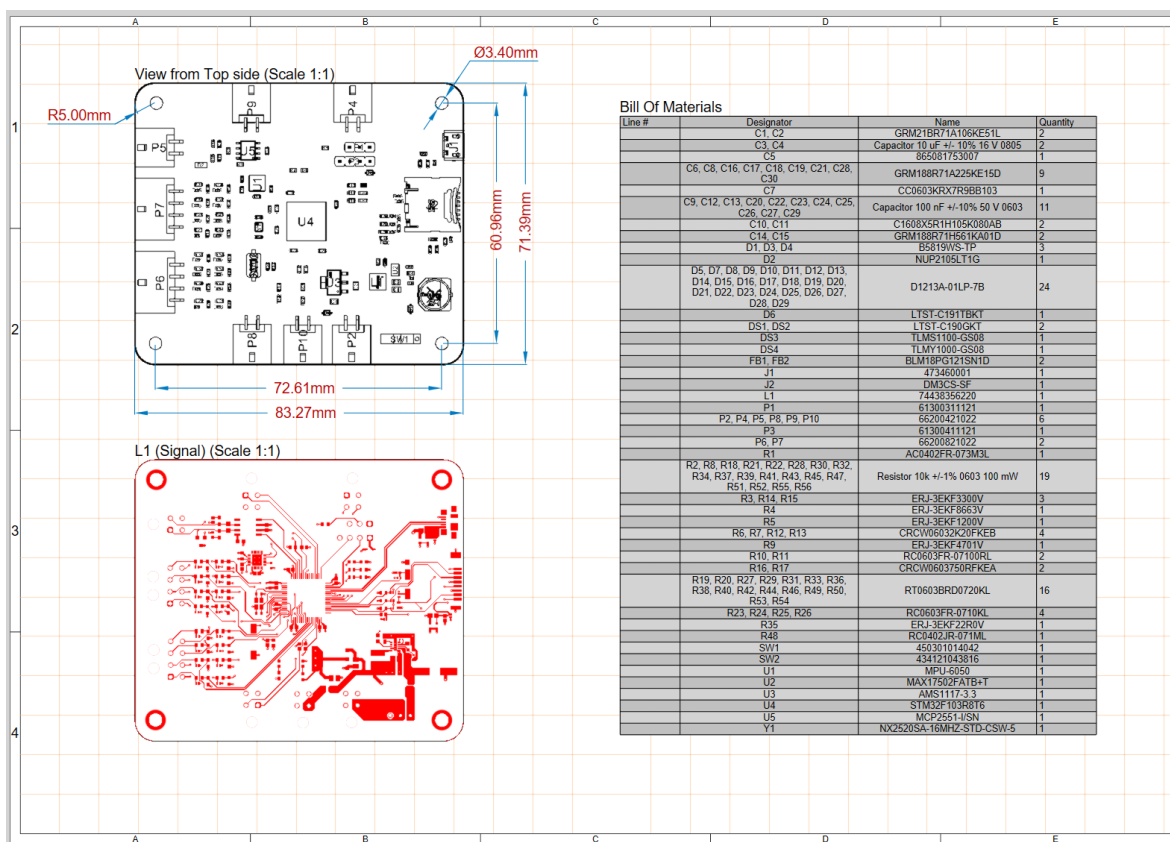
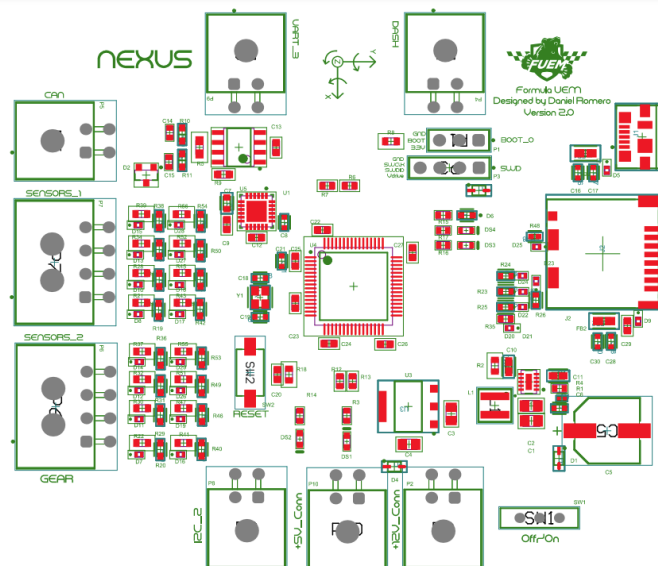
2. Pinout



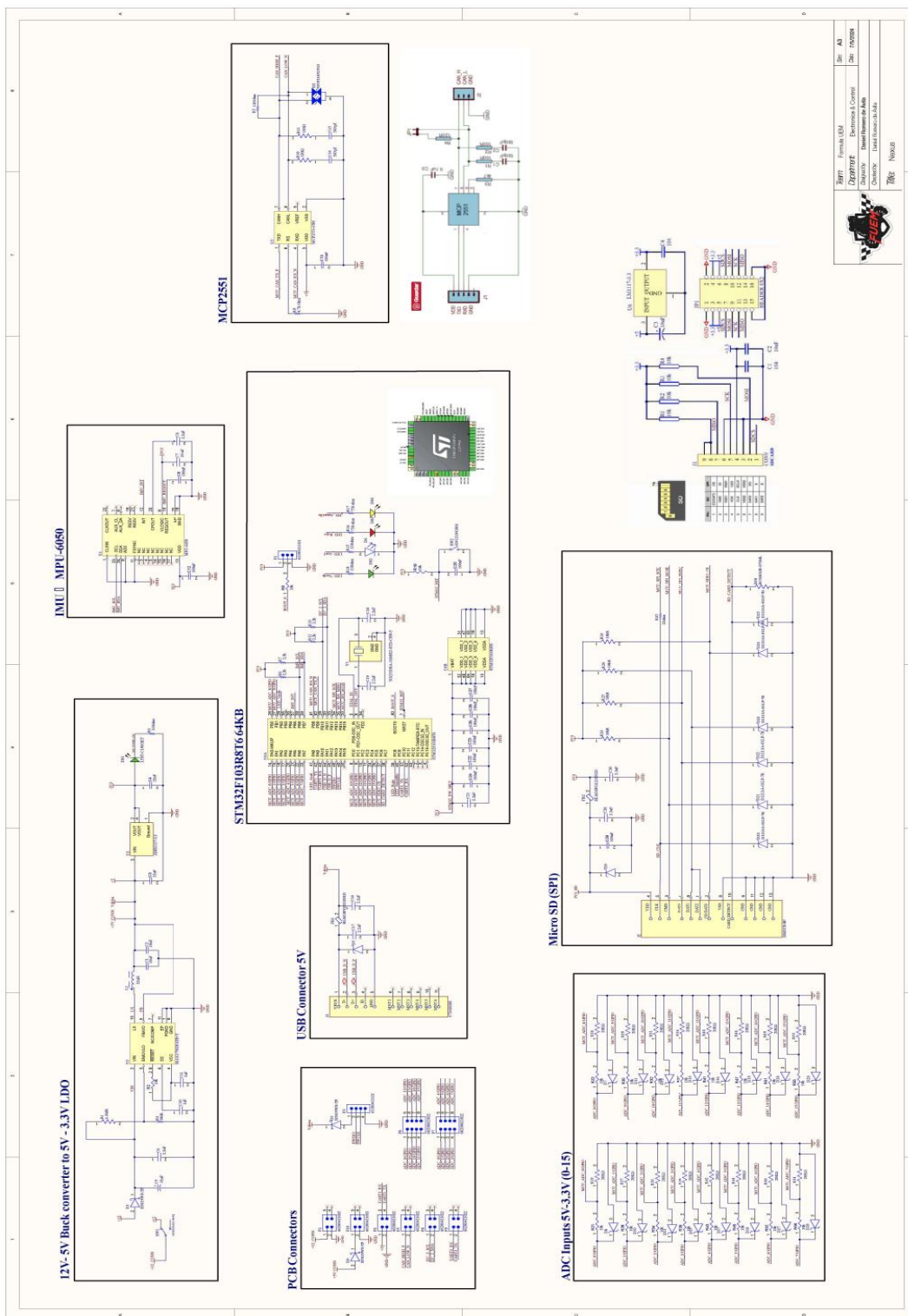
3. Technical Specification

	Unit	Value
Power voltage	V	13.8 & 5V
Maximum current	A	0.5
Dimensions	mm*mm	83.27 * 71.39
Weigh	g	
Temperature range	C	-20 to 50
Wire diameter	AWG	22 to 30
Voltage range ADCs	V	0 to 3.3

4. Assembly drawings



6. Schematic



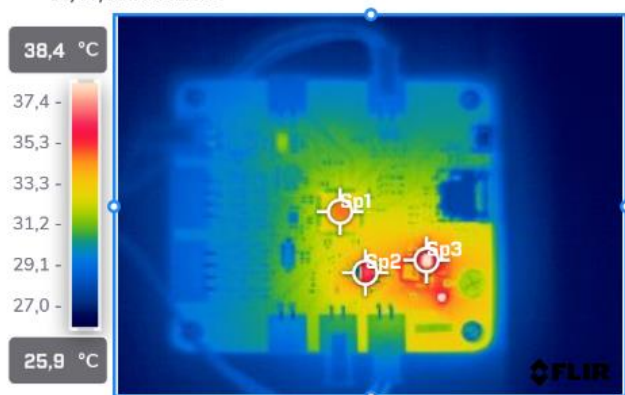
7. Bill of material

Line #	Designator	Name	Quantity
	C1, C2	GRM21BR71A106KE51L	2
	C3, C4	Capacitor 10 uF +/- 10% 16 V 0805	2
	C5	865081753007	1
	C6, C8, C16, C17, C18, C19, C21, C28, C30	GRM188R71A225KE15D	9
	C7	CC0603KRX7R9BB103	1
	C9, C12, C13, C20, C22, C23, C24, C25, C26, C27, C29	Capacitor 100 nF +/-10% 50 V 0603	11
	C10, C11	C1608X5R1H105K080AB	2
	C14, C15	GRM188R71H561KA01D	2
	D1, D3, D4	B5819WS-TP	3
	D2	NUP2105LT1G	1
	D5, D7, D8, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29	D1213A-01LP-7B	24
	D6	LTST-C191TBKT	1
	DS1, DS2	LTST-C190GKT	2
	DS3	TLMS1100-GS08	1
	DS4	TLMY1000-GS08	1
	FB1, FB2	BLM18PG121SN1D	2
	J1	473460001	1
	J2	DM3CS-SF	1
	L1	74438356220	1
	P1	61300311121	1
	P2, P4, P5, P8, P9, P10	66200421022	6
	P3	61300411121	1
	P6, P7	66200821022	2
	R1	AC0402FR-073M3L	1
	R2, R8, R18, R21, R22, R28, R30, R32, R34, R37, R39, R41, R43, R45, R47, R51, R52, R55, R56	Resistor 10k +/-1% 0603 100 mW	19
	R3, R14, R15	ERJ-3EKF3300V	3
	R4	ERJ-3EKF8663V	1
	R5	ERJ-3EKF1200V	1
	R6, R7, R12, R13	CRCW06032K20FKEB	4
	R9	ERJ-3EKF4701V	1
	R10, R11	RC0603FR-07100RL	2
	R16, R17	CRCW0603750RFKEA	2
	R19, R20, R27, R29, R31, R33, R36, R38, R40, R42, R44, R46, R49, R50, R53, R54	RT0603BRD0720KL	16
	R23, R24, R25, R26	RC0603FR-0710KL	4
	R35	ERJ-3EKF22R0V	1
	R48	RC0402JR-071ML	1
	SW1	450301014042	1
	SW2	434121043816	1
	U1	MPU-6050	1
	U2	MAX17502FATB+T	1
	U3	AMS1117-3.3	1
	U4	STM32F103R8T6	1
	U5	MCP2551-I/SN	1
	Y1	NX2520SA-16MHZ-STD-CSW-5	1

8. Conclusions



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FLIR6632.jpg



64502073

Parameters

Emissivity	0,95
Distance	1,00 m
Reflected temp.	20,0 °C
Atmospheric temp.	24,0 °C
Relative humidity	50,0%
Ext. optics temp.	20,0 °C
Ext. optics trans.	1,00

File information

File name	FLIR6632.jpg
File size	503 KB
Width	240
Height	180
Minimum temp.	26,0 °C
Maximum temp.	40,5 °C

Camera information

Camera model	FLIR E50bx
Lens	FOL10
Camera serial	64502073
Filter	
Range max.	120,0 °C
Range min.	-20,0 °C
Field of view	44,99

Measurements

Sp1	34,7 °C
Sp2	36,7 °C
Sp3	40,3 °C