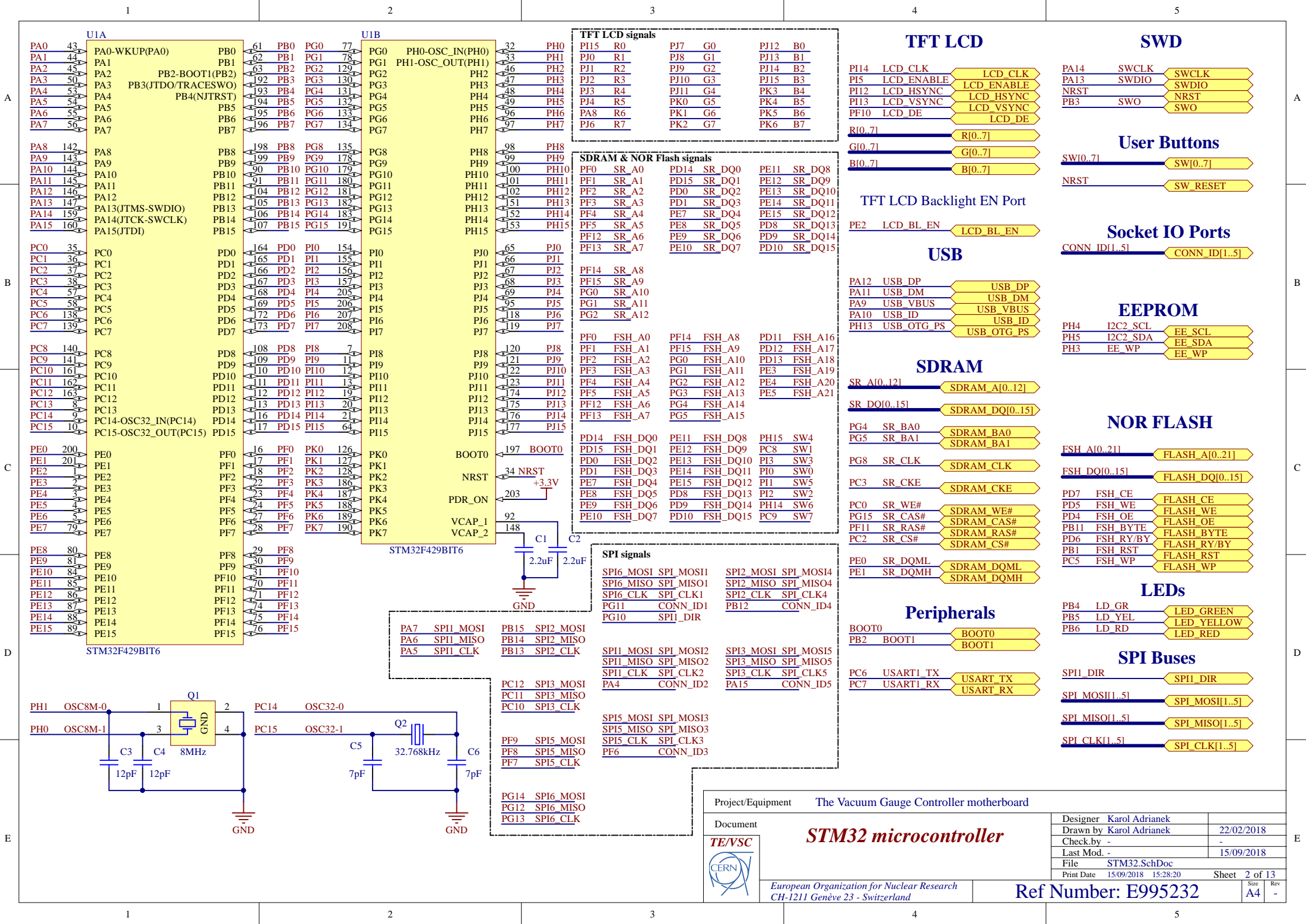
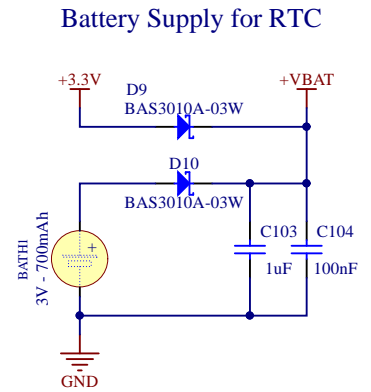
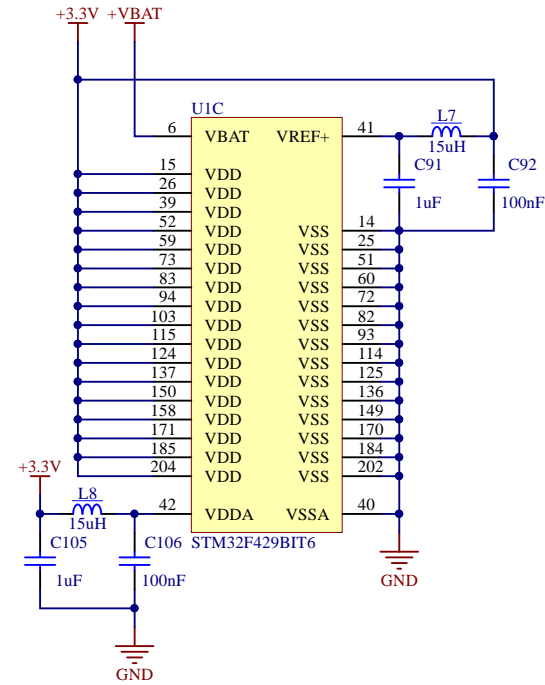
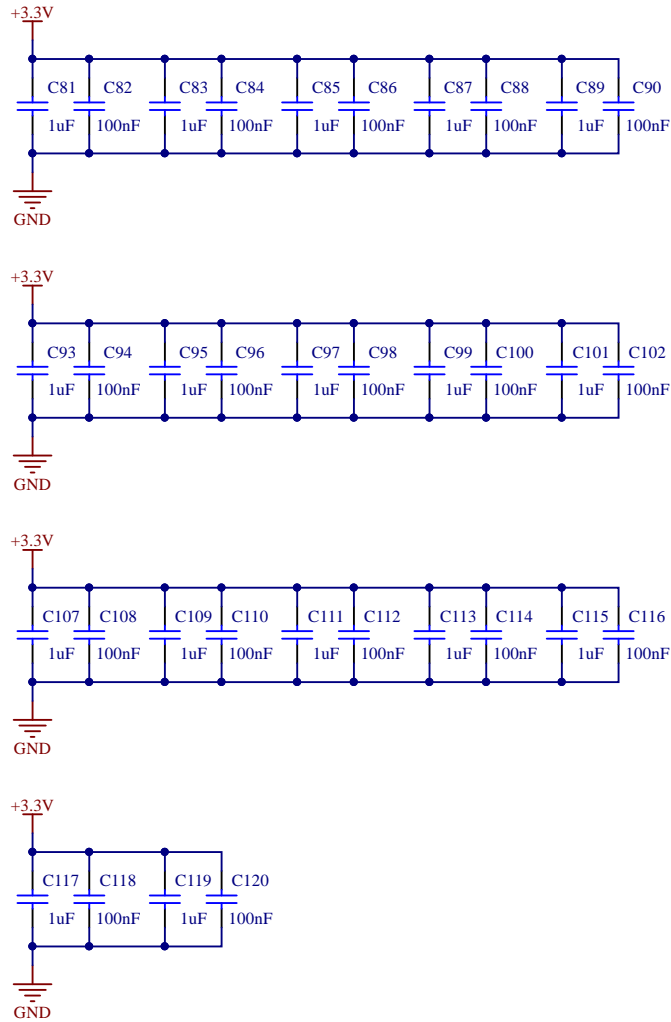


Project/Equipment		The Vacuum Gauge Controller motherboard	
Document	Designer	Karol Adrianek	
	Drawn by	Karol Adrianek	22/02/2018
	Check by	-	-
	Last Mod.	-	15/09/2018
	File	Controller.SchDoc	
Print Date		15/09/2018 15:28:20	Sheet 1 of 13
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Ref Number: E995232	Size A4 Rev -





Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Designer Karol Adrianek	
		Drawn by Karol Adrianek	
		Check.by -	
		Last Mod. -	
		File STM32PowerSupply.SchDoc	
		Print Date 15/09/2018 15:28:20	
		Sheet 3 of 13	
		Size A4	
		Rev -	

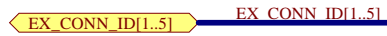


European Organization for Nuclear Research
CH-1211 Genève 23 - Switzerland

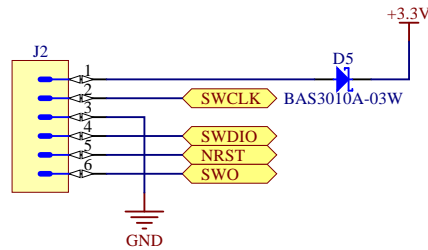
STM32 Power Supply

Ref Number: E995232

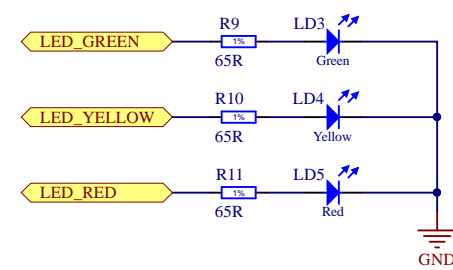
External Buses



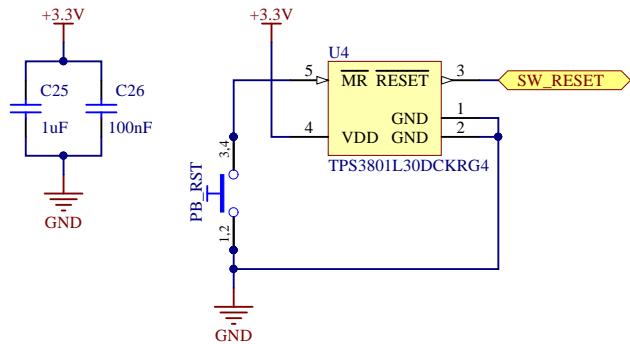
SWD Programmer



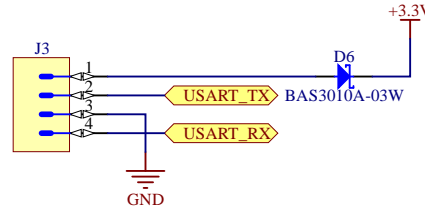
LEDs



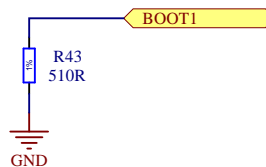
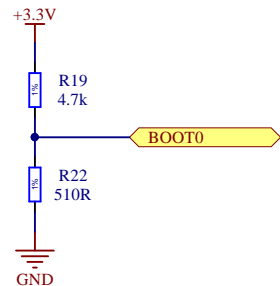
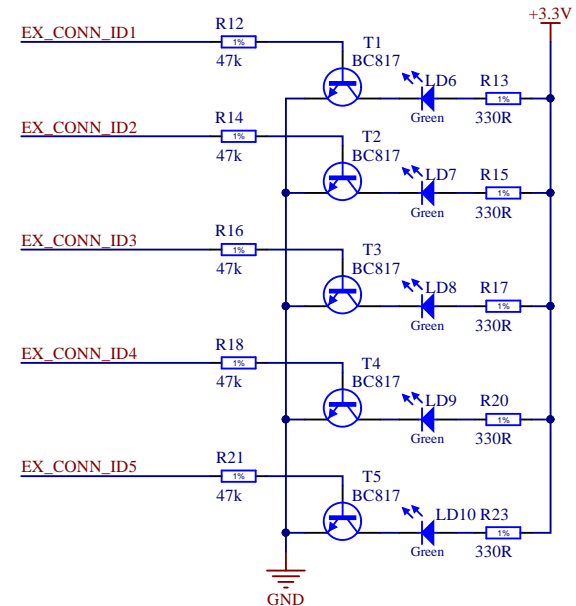
Reset Switch



USART

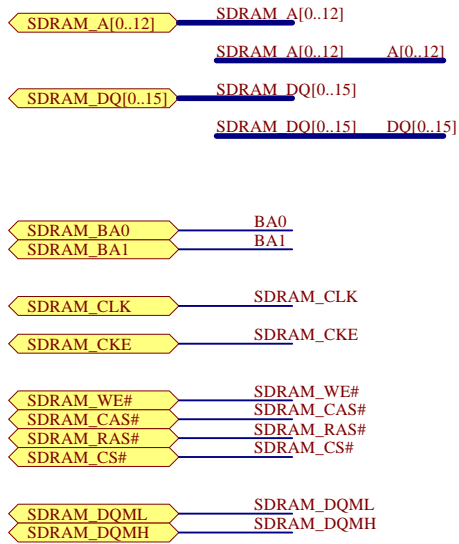


LED Indicators of External Cards

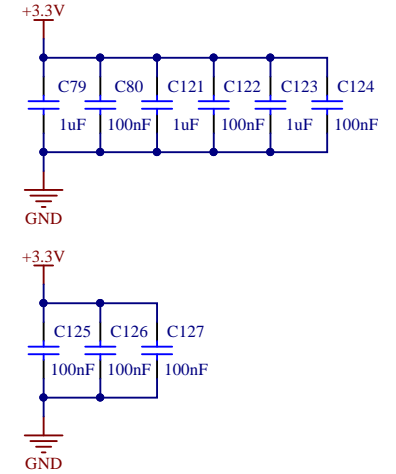
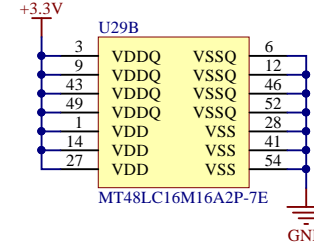
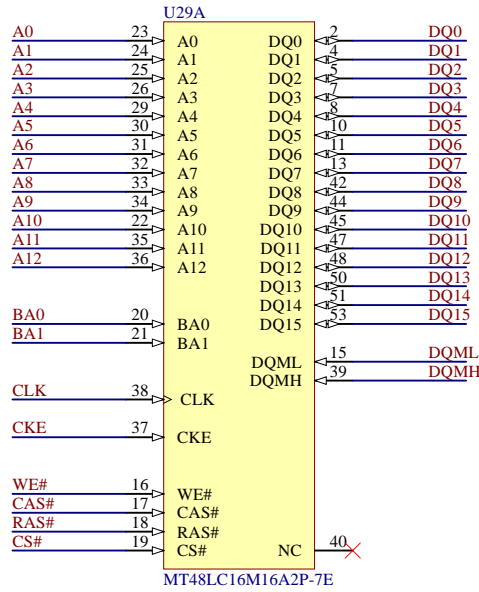


Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		<div> <div> </div> <div> STM32 Peripherals </div> </div>	
Designer		Karol Adrianek	
Drawn by		Karol Adrianek	22/02/2018
Check by		-	-
Last Mod.		-	15/09/2018
File		STM32Peripherals.SchDoc	
Print Date		15/09/2018 15:28:20	Sheet 4 of 13
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Ref Number: E995232	
Size		A4	Rev -

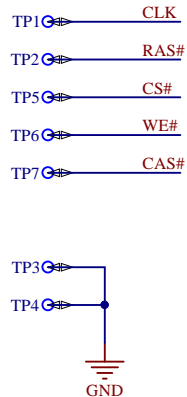
External Buses



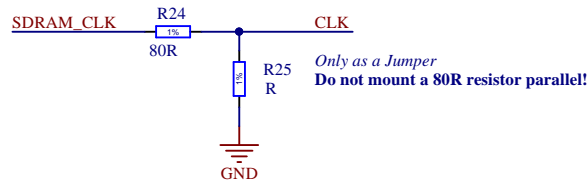
256Mbit 32M x 16bit Micron SDRAM



Testpoints

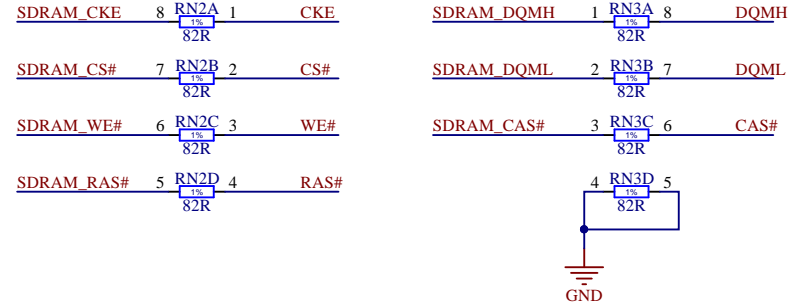


Clock terminations



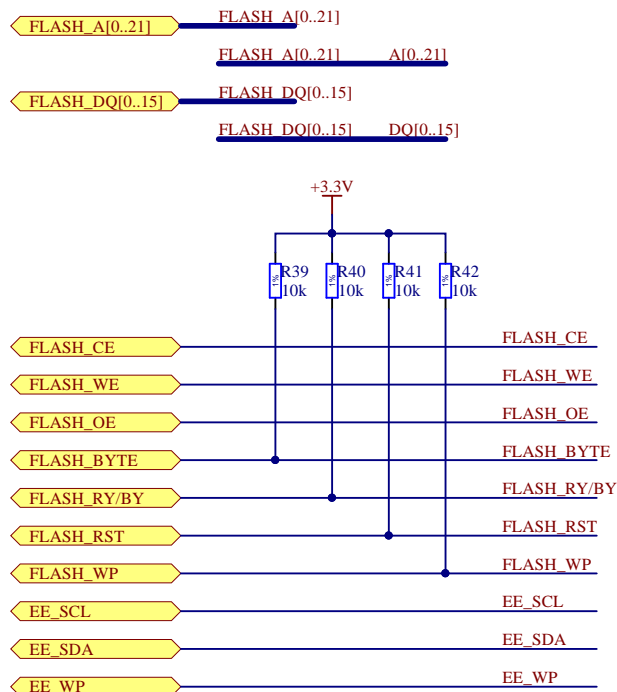
Only as a Jumper
 Do not mount a 80R resistor parallel!

Control line terminations

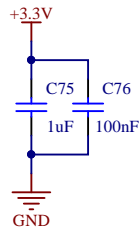
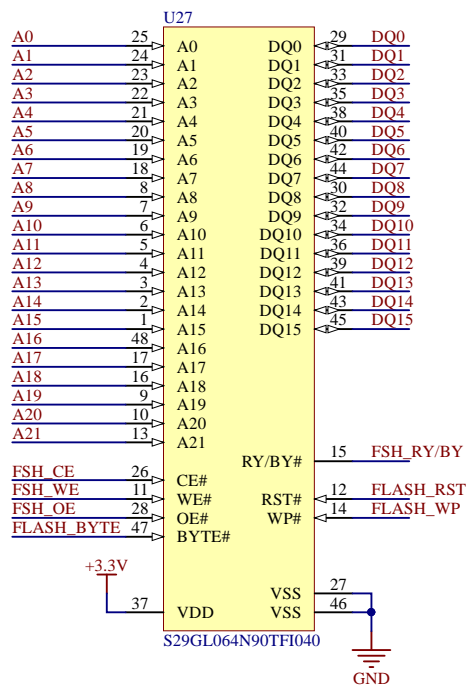


Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		256Mbit Micron SDRAM	
	Designer	Karol Adrianek	
	Drawn by	Karol Adrianek	22/02/2018
	Check by	-	-
	Last Mod.	-	15/09/2018
	File	SRAM.SchDoc	
Print Date		15/09/2018 15:28:20	Sheet 5 of 13
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Ref Number: E995232	
Size		A4	Rev -

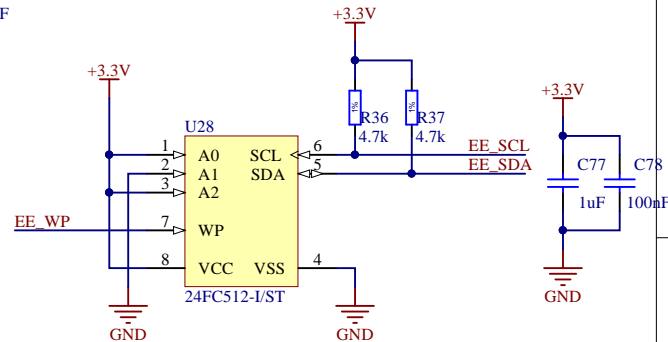
External Buses



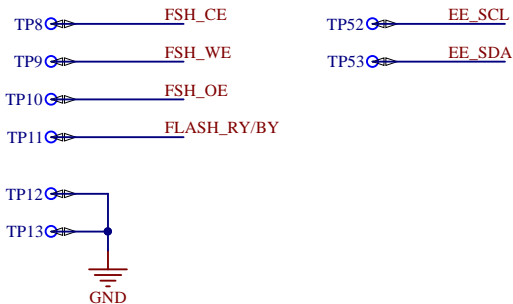
64Mbit 4M x 16bit NOR FLASH



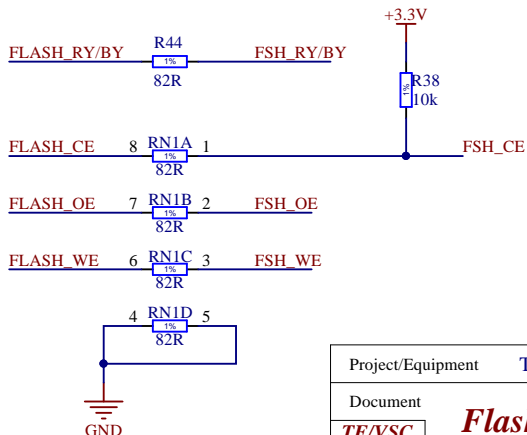
512Kbit EEPROM



Testpoints



Termination



Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Flash & EEPROM Memories	
	Designer	Karol Adrianek	
	Drawn by	Karol Adrianek	22/02/2018
	Check by	-	-
	Last Mod.	-	15/09/2018
	File	FlashMemories.SchDoc	
Print Date		15/09/2018 15:28:20	Sheet 6 of 13
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Ref Number: E995232	
		Size	Rev
		A4	-

A

B

C

D

E

A

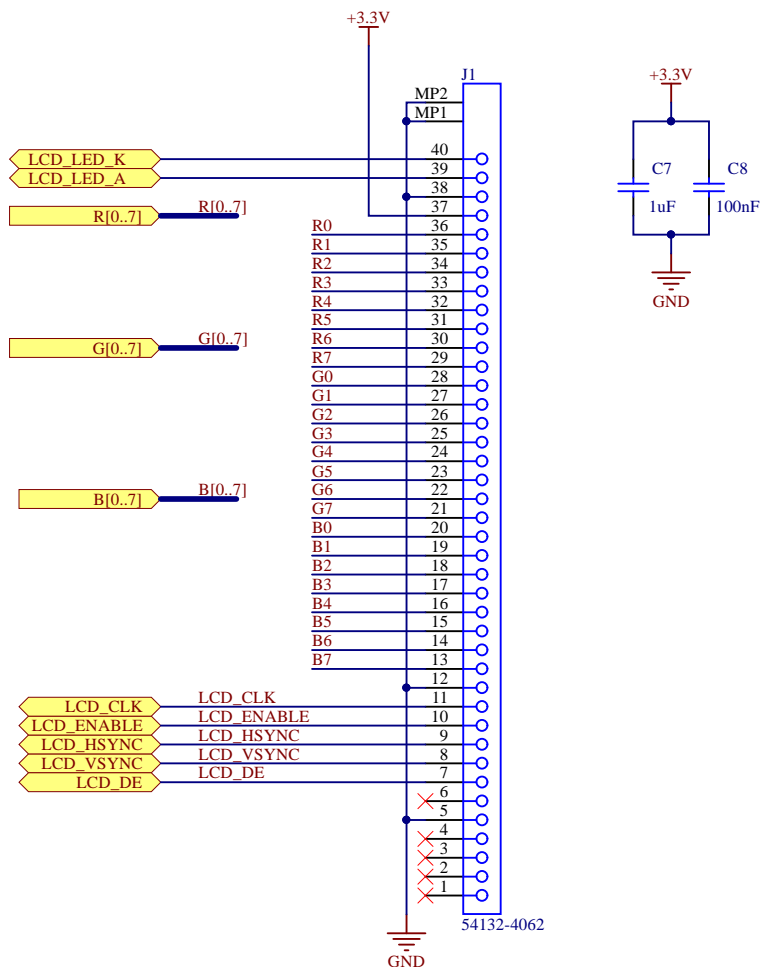
B

C

D

E

Info: Only the top FFC connector!



TFT LCD - MCT050TC12W800480LML

<http://www.newark.com/midas/mct050tc12w800480lml/display-lcd-tft-5-800x480-landscape/dp/01AC6905>

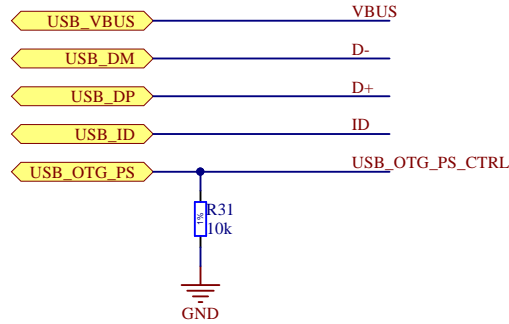
Pin	Symbol	Function	Remark
1	VLED-	Power for LED backlight (Cathode)	
2	VLED+	Power for LED backlight (Anode)	
3	GND	Power Ground	
4	VDD	Power voltage	
5	R0	Red data (LSB)	
6	R1	Red data	
7	R2	Red data	
8	R3	Red data	
9	R4	Red data	
10	R5	Red data	
11	R6	Red data	
12	R7	Red data(MSB)	
13	G0	Green data(LSB)	
14	G1	Green data	
15	G2	Green data	
16	G3	Green data	
17	G4	Green data	
18	G5	Green data	
19	G6	Green data	
20	G7	Green data(MSB)	
21	B0	Blue data(LSB)	
22	B1	Blue data	
23	B2	Blue data	
24	B3	Blue data	
25	B4	Blue data	
26	B5	Blue data	
27	B6	Blue data	
28	B7	Blue data(MSB)	
29	GND	Power Ground	
30	CLK	Sample clock	
31	DISP	Display on/off	
32	HS	Horizontal sync input	
33	VS	Vertical sync input	
34	DE	Data input enable	
35	NC	No connection	
36	GND	Power Ground	
37~40	NC	No connection	

Testpoints

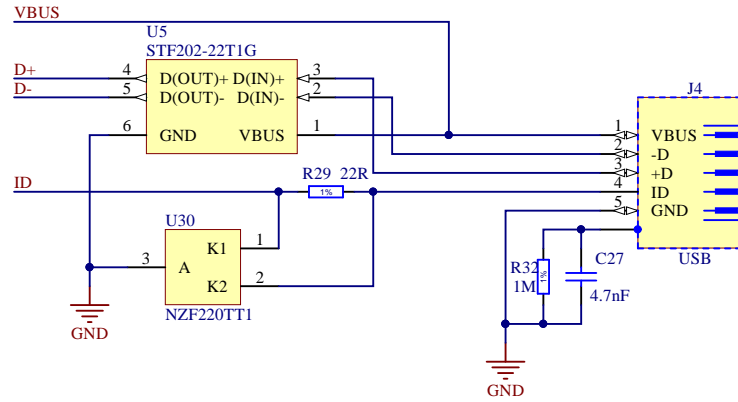


Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Designer	Karol Adrianek
		Drawn by	Karol Adrianek
		Check.by	-
		Last Mod.	-
		File	LCD.SchDoc
		Print Date	15/09/2018 15:28:20
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Sheet	7 of 13
		Size	A4
Ref Number: E995232		Rev	-

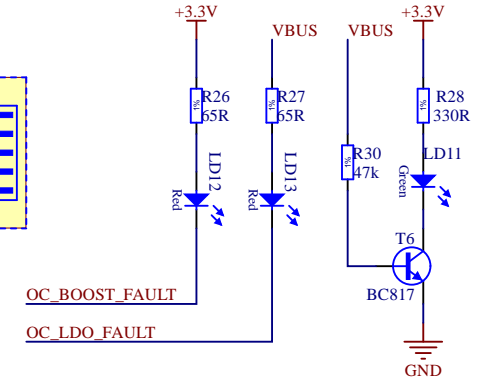
STM32 USB IO Ports



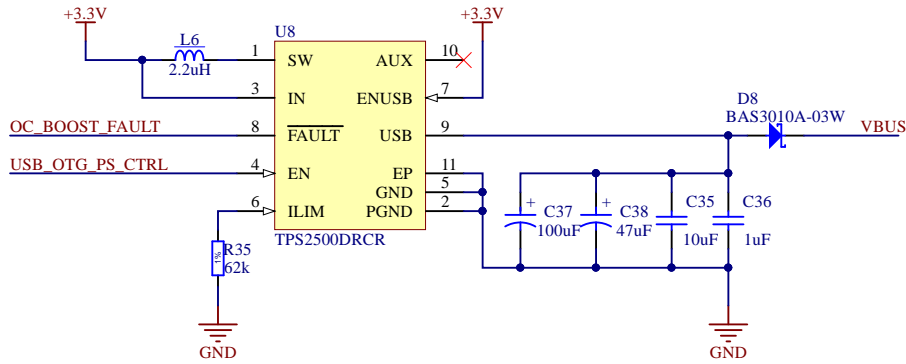
USB Socket Schield - ESD protection



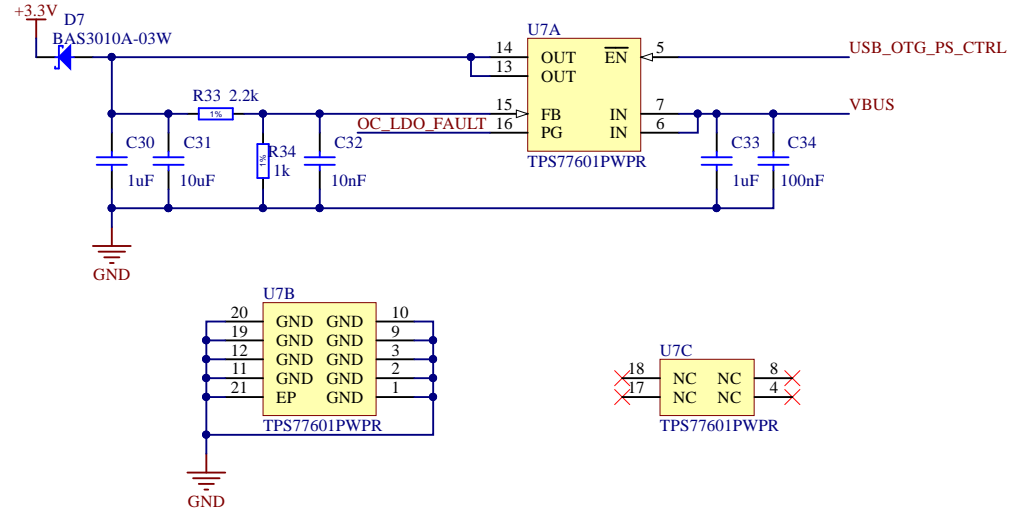
LED Indicators



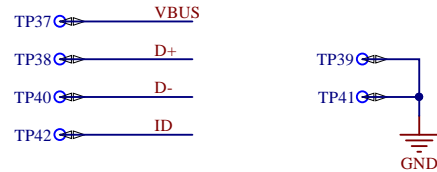
Boost Converter: 5V - 500mA



Linear Voltage regulator: 3.6V - 500mA



Testpoints



Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Designer Karol Adrianek	
		Drawn by Karol Adrianek	
		Check.by -	
		Last Mod. -	
		File USB.SchDoc	
		Print Date 15/09/2018 15:28:21	
		Sheet 9 of 13	
		Size A4	
		Rev -	



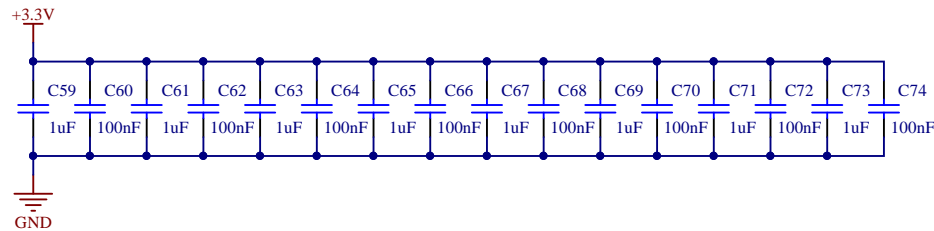
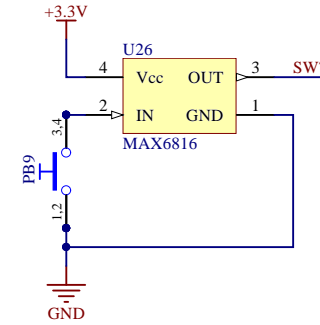
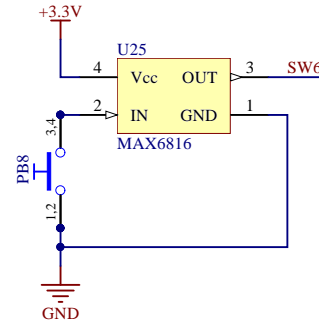
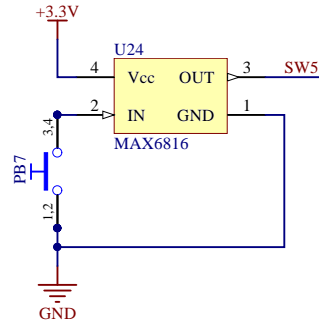
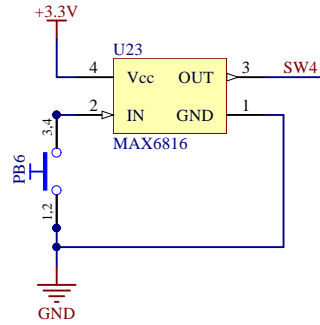
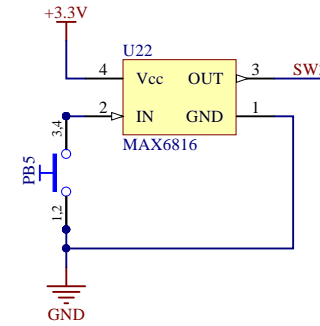
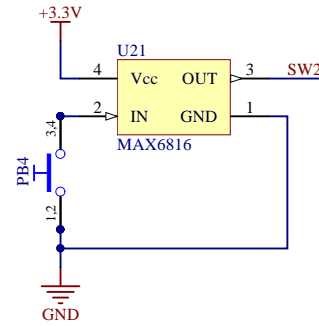
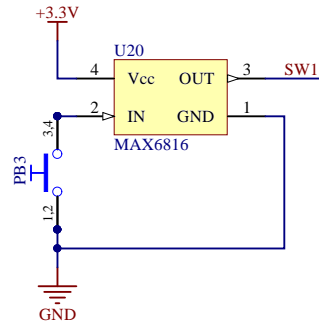
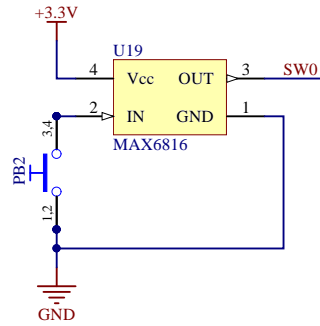
European Organization for Nuclear Research
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USB On-The-Go

Ref Number: E995232

STM32 IO Port bus

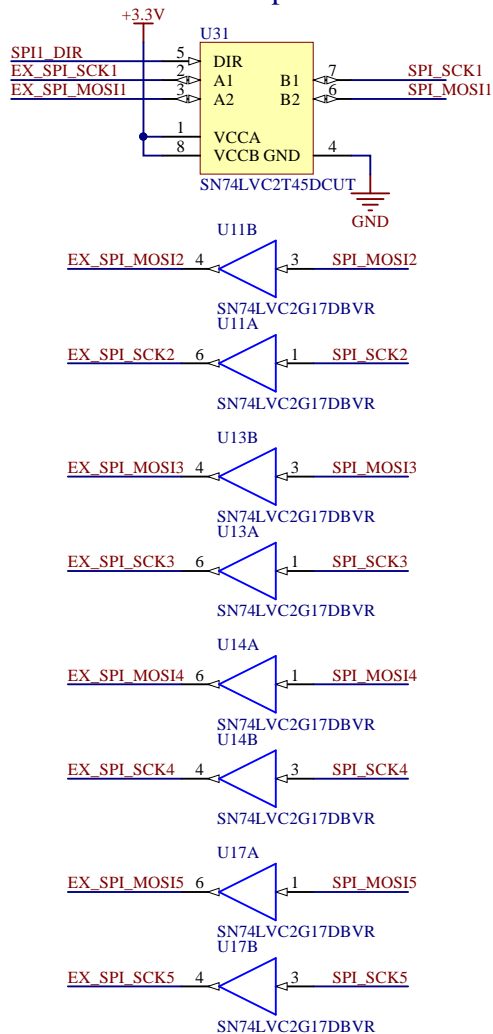
SW[0..7]



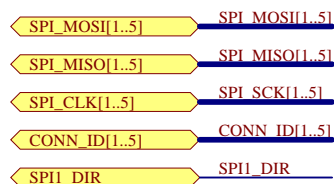
Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Designer	Karol Adrianek
		Drawn by	Karol Adrianek
		Check.by	-
		Last Mod.	-
		File	Buttons.SchDoc
		Print Date	15/09/2018 15:28:21
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Sheet	10 of 13
Ref Number: E995232		Size	A4
		Rev	-

User Buttons

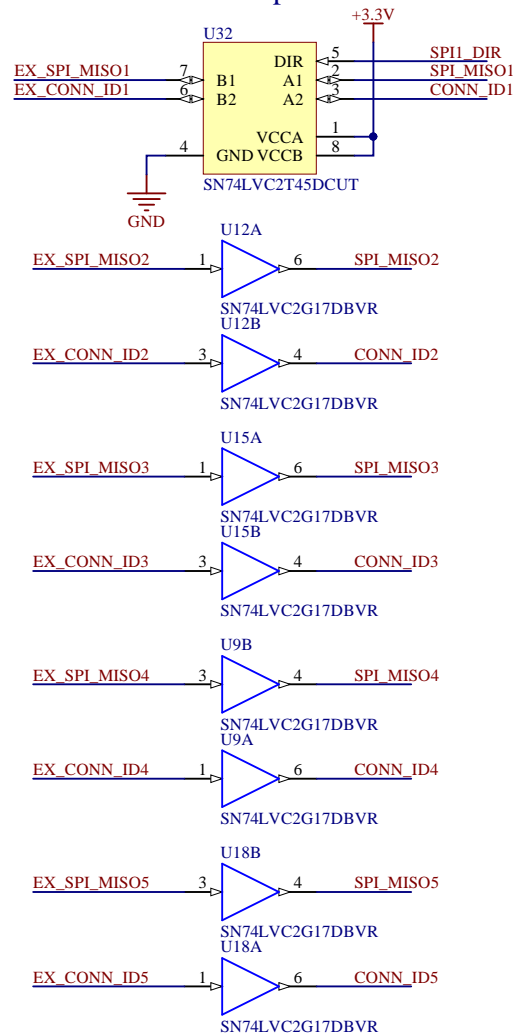
STM32 Output Ports



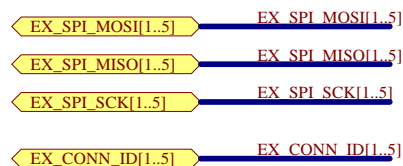
STM32 Buses



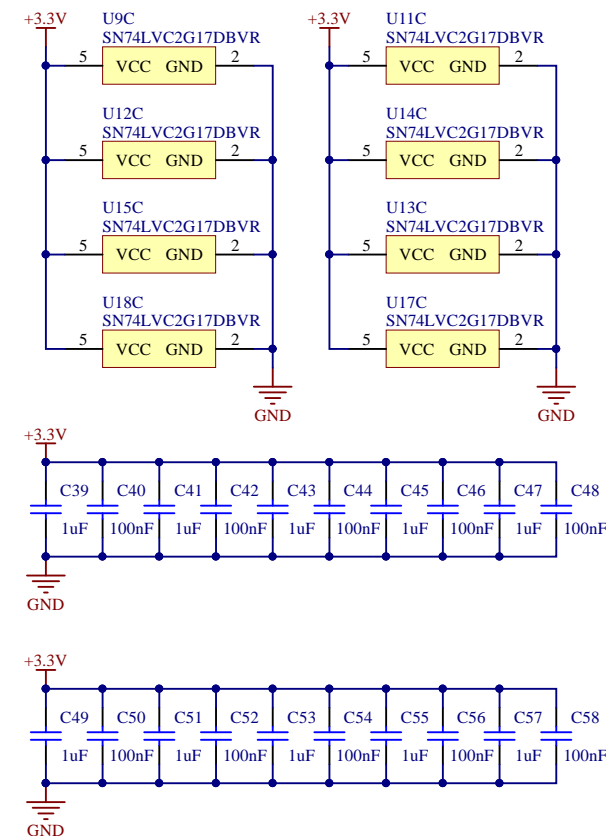
STM32 Input Ports



External Socket IO Ports



Buffer Power Supply



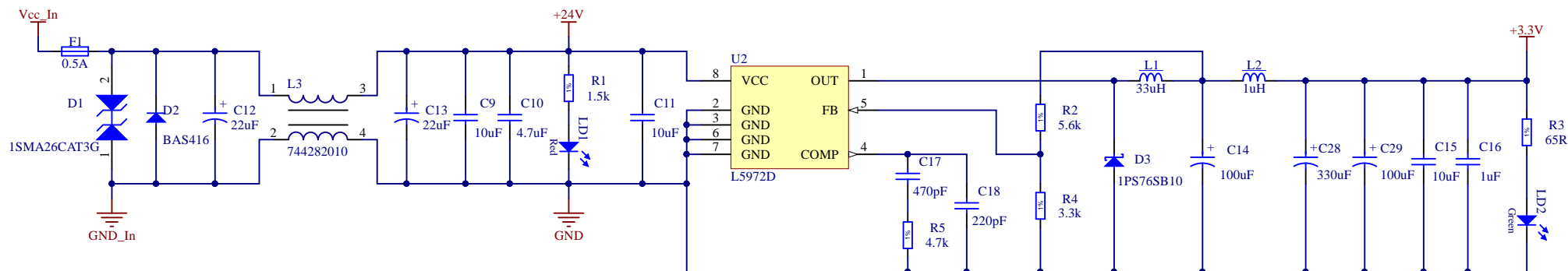
Testpoints



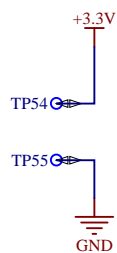
Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Designer Karol Adrianek	
		Drawn by Karol Adrianek	
		22/02/2018	
		Check by -	
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		15/09/2018	
		File Buffers.SchDoc	
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		Sheet 11 of 13	
		Size A4	
		Rev -	



Buck Converter 24V/3.3V 2A Limit Current

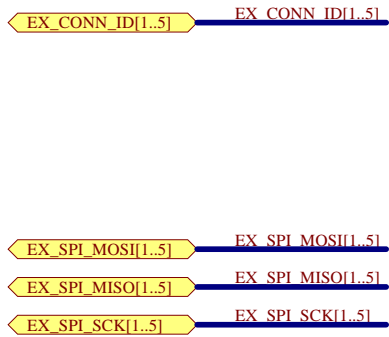


Testpoints

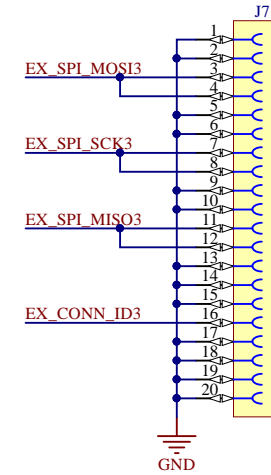
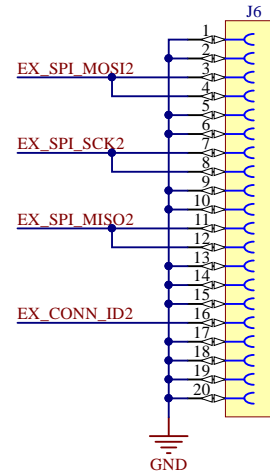
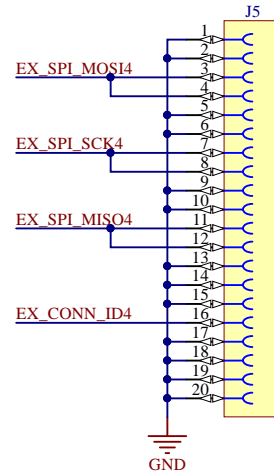


Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Designer	Karol Adrianek
		Drawn by	Karol Adrianek
		22/02/2018	
		Check.by	-
		Last Mod.	15/09/2018
		File	PowerSupply.SchDoc
Print Date		15/09/2018 15:28:21	Sheet 12 of 13
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Ref Number: E995232	
		Size	A4
		Rev	-

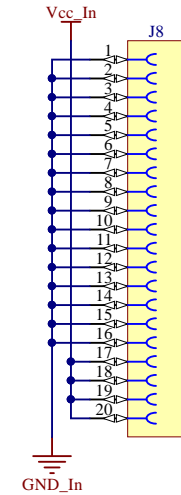
Buffer Buses



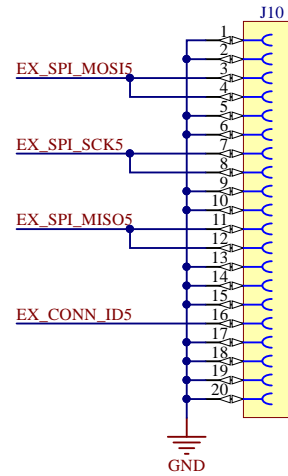
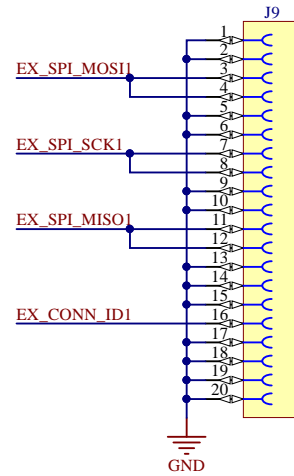
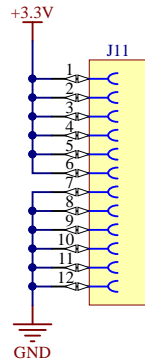
External Communication Sockets



Main Power Socket




Additional +3.3VDC socket



ESQ-110-44-T-D SAMTEC Female Socket



Project/Equipment		The Vacuum Gauge Controller motherboard	
Document		Designer	Karol Adrianek
		Drawn by	Karol Adrianek
		Check.by	-
		Last Mod.	-
		File	ExternalSockets.SchDoc
		Print Date	15/09/2018 15:28:21
European Organization for Nuclear Research CH-1211 Genève 23 - Switzerland		Sheet	13 of 13
		Size	A4
Ref Number: E995232		Rev	-