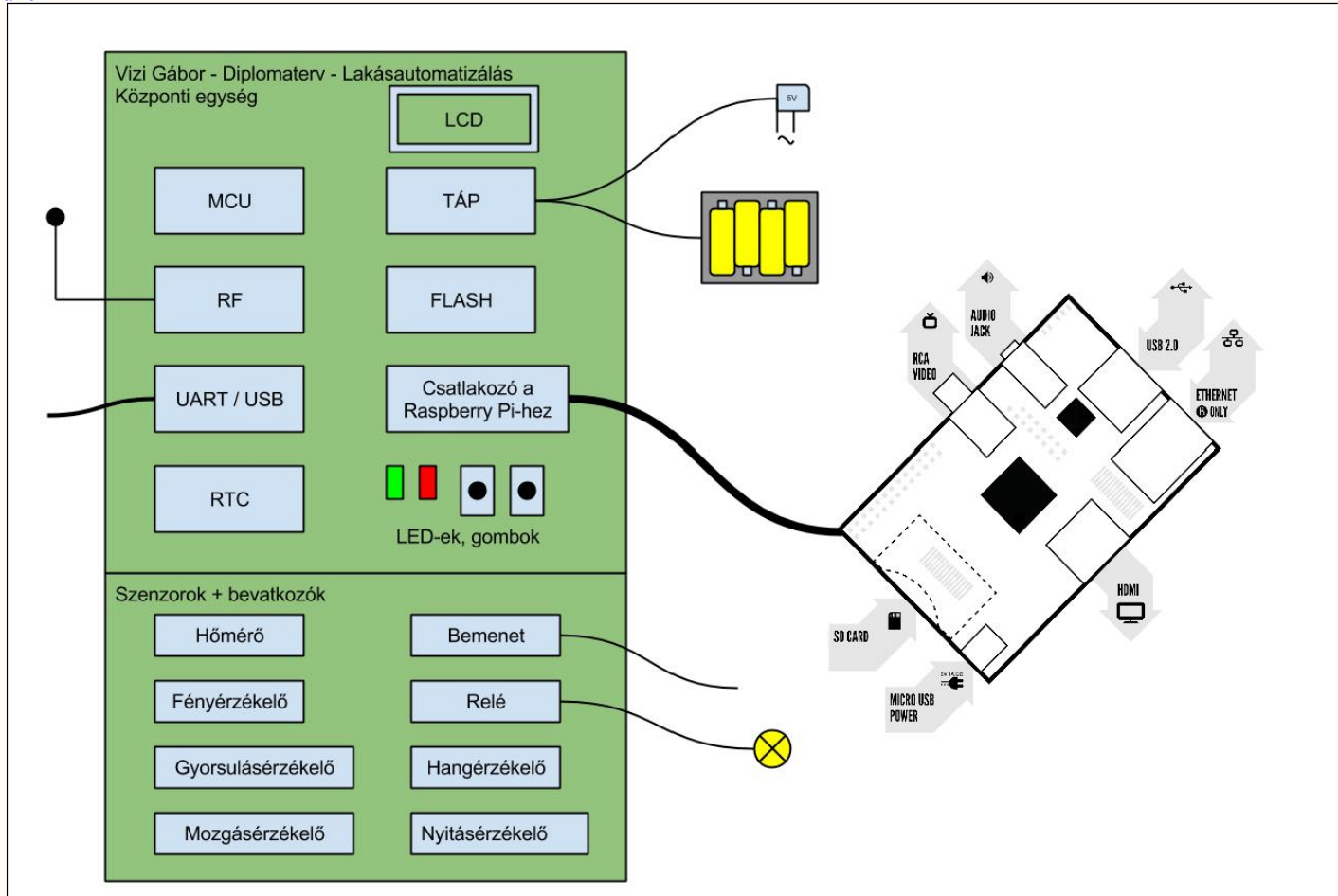


Blockdiagram - CenterPanel

[Blockdiagram link \(Google Drive\)](#)



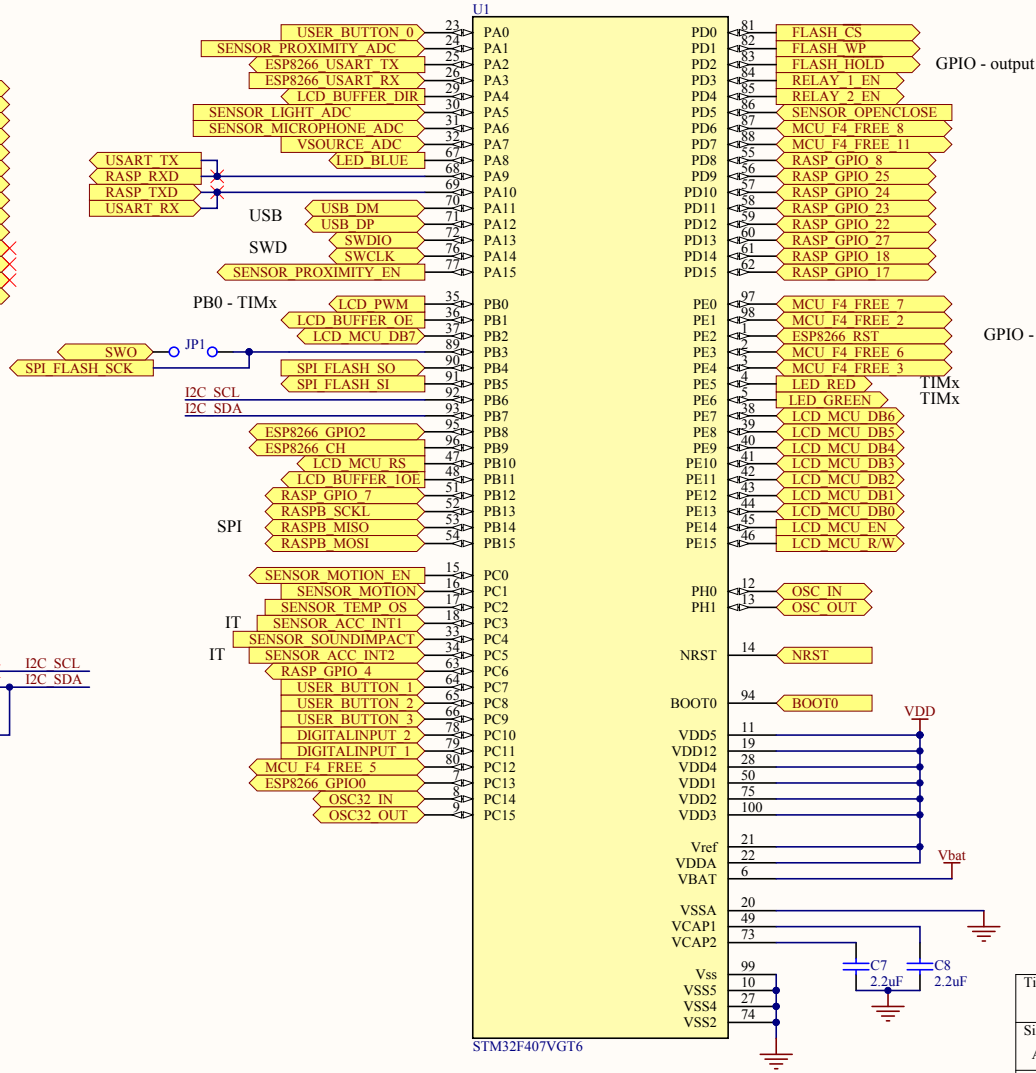
Title			Lakásautomatizálás
Size	Number	Revision	
A4		v1	
Date:	2015.12.11.	Sheet of Blockdiagram - CenterPanel	
File:	C:\Users\... \Sheet	Blockdiagram CenterPanel	DoVizi Gábor

MCU - F4

- FREE pins**
- MCU F4 FREE 1
 - MCU F4 FREE 1
 - MCU F4 FREE 2
 - MCU F4 FREE 3
 - MCU F4 FREE 4
 - MCU F4 FREE 5
 - MCU F4 FREE 6
 - MCU F4 FREE 7
 - MCU F4 FREE 8
 - MCU F4 FREE 9
 - MCU F4 FREE 10
 - MCU F4 FREE 10
 - MCU F4 FREE 4
 - MCU F4 FREE 9

- USART**
- USART CTS
 - USART RTS

- I2C**
- SENSOR TEMP_SCL
 - SENSOR TEMP_SDA
 - SENSOR ACC_SCL
 - SENSOR ACC_SDA



GPIO - output

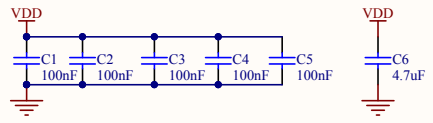
GPIO - output

TIMx

VDD

Vbat

VDD

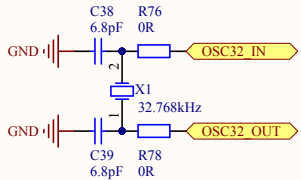


Title			
Lakásautomatizálás			
Size	Number	Revision	v1
A4			
Date:	2015.12.11.	Sheet of	MCU - F4
File:	C:\Users\... \Sheet MCU F4.SchDoc	Drawn By:	Vizi Gábor

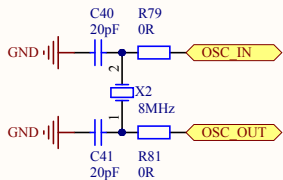
STM32F407VGT6

Core

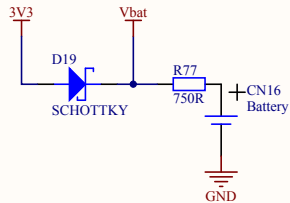
X1 crystal for RTC



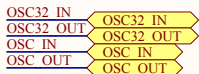
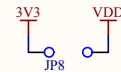
X2



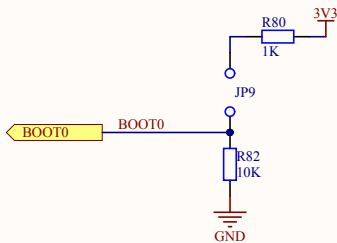
Vbat



Vigyázat!!
Vbat csak az F4-en van, F0-án és L1-en nincs!
Ellenállást beállítani!



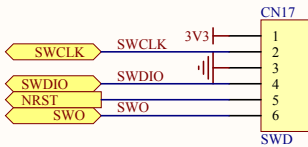
BOOT0



Allítható Boot0

SWD

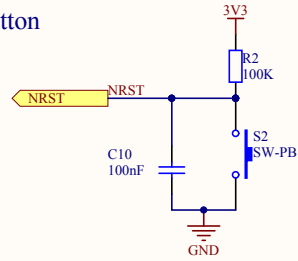
SWD:
SWCLK &
SWDIO kell
csak
jumper a
3V3-ra?



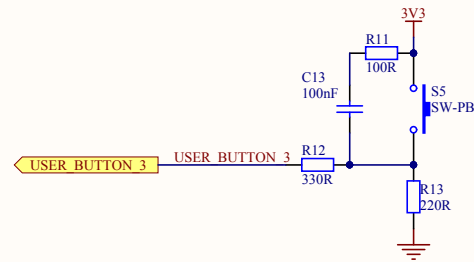
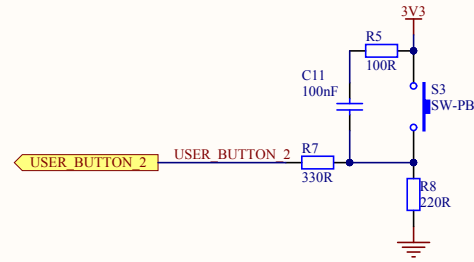
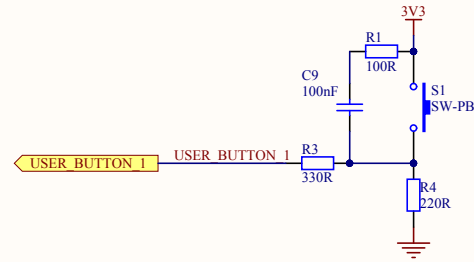
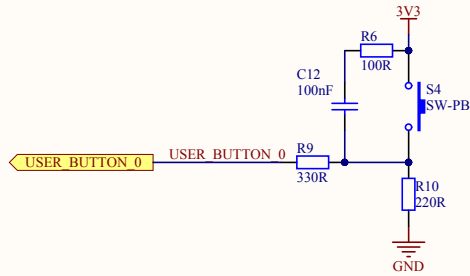
Title			Lakásautomatizálás		
Size	Number			Revision	v1
A4					
Date:	2015.12.11.	Sheet of	Core		
File:	C:\Users\...Sheet	Core.SchDoc	Drawn By:	Vizi Gábor	

Button

RESET Button

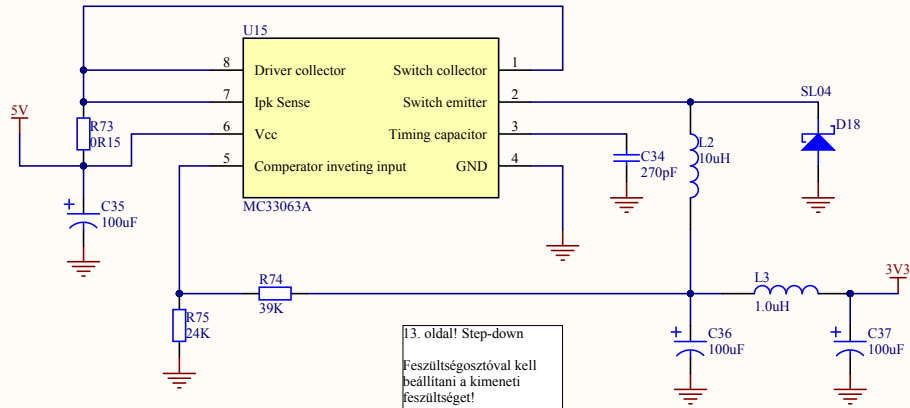


USER & WAKE-UP Button



Title			
Lakásautomatizálás			
Size	Number	Revision	
A4		v1	
Date:	2015.12.11.	Sheet of	Button
File:	C:\Users\...\Sheet Button.SchDoc	Drawn By:	Vizi Gábor

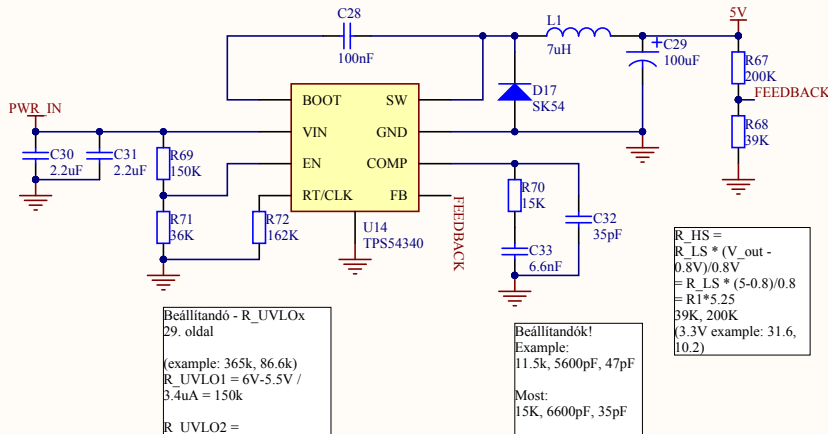
DC-DC-3V3



l3. oldal! Step-down
 Feszültségosztóval kell
 beállítani a kimeneti
 feszültséget!
 $V_{out} = 1,25 * (1 + R2/R1)$
 $R2 = \text{fenti}$

Title			Lakásautomatizálás
Size	Number	Revision	
A4		v1	
Date:	2015.12.11.	Sheet of	DC-DC-3V3
File:	C:\Users\... \Sheet DC-DC-3V3.SchDoc	Drawn By:	Vizi Gábor

DC-DC-5V



Beállítandó - R_UVLOx
29. oldal

 (example: 365k, 86.6k)
 $R_{UVLO1} = 6V - 5.5V / 3.4uA = 150k$

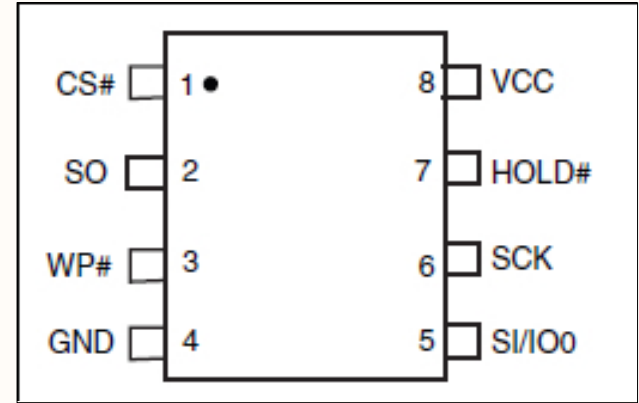
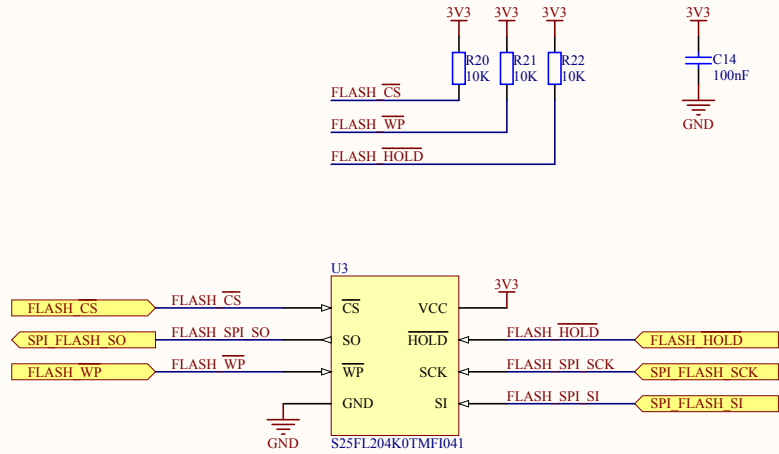
 $R_{UVLO2} = 1.2 / ((6 - 1.2) / (150 * 10^{-3}) + 1.2 * 10^{-6}) = 36k$

Beállítandók!
 Example:
 11.5k, 5600pF, 47pF
 Most:
 15k, 6600pF, 35pF

$R_{HS} =$
 $R_{LS} * (V_{out} - 0.8V) / 0.8V$
 $= R_{LS} * (5 - 0.8) / 0.8$
 $= R1 * 5.25$
 39k, 200k
 (3.3V example: 31.6, 10.2)

Title Lakásautomatizálás		
Size A4	Number	Revision v1
Date: 2015.12.11.	Sheet of DC-DC-5V	Drawn By: Vizi Gábor
File: C:\Users\...\Sheet DC-DC-5V.SchDoc		

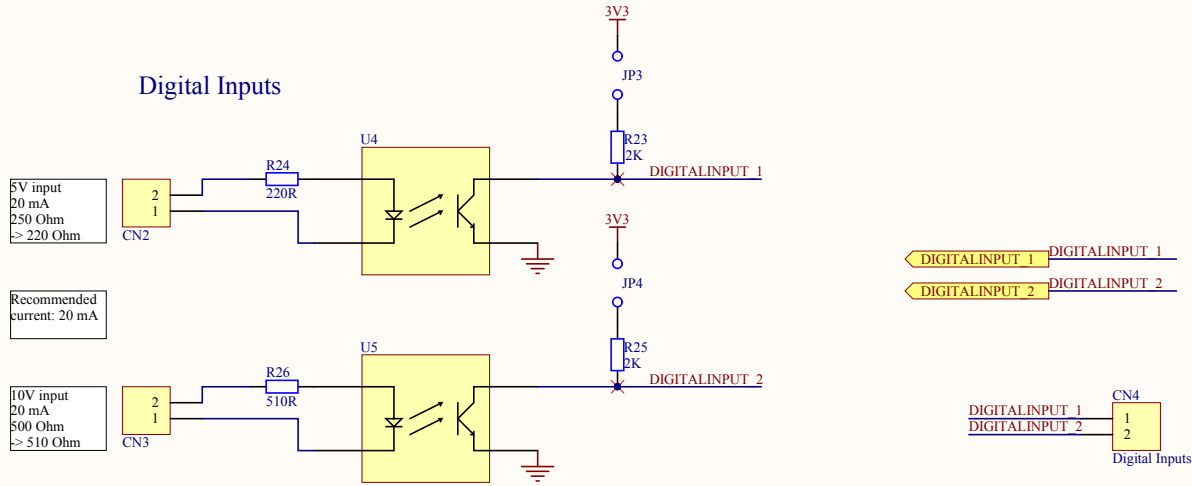
Flash



Title		
Lakásautomatizálás		
Size	Number	Revision
A4		v1
Date:	2015.12.11.	Sheet of Flash
File:	C:\Users\...\Sheet Flash.SchDoc	Drawn By: Vizi Gábor

Digital Input

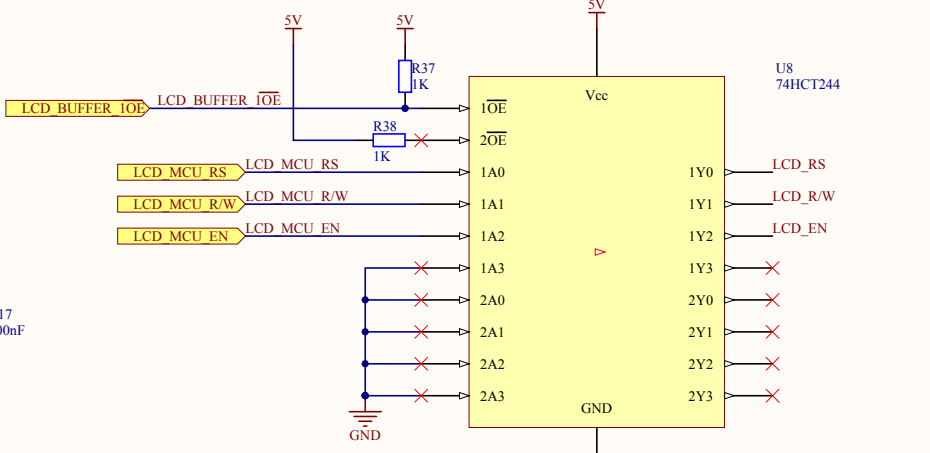
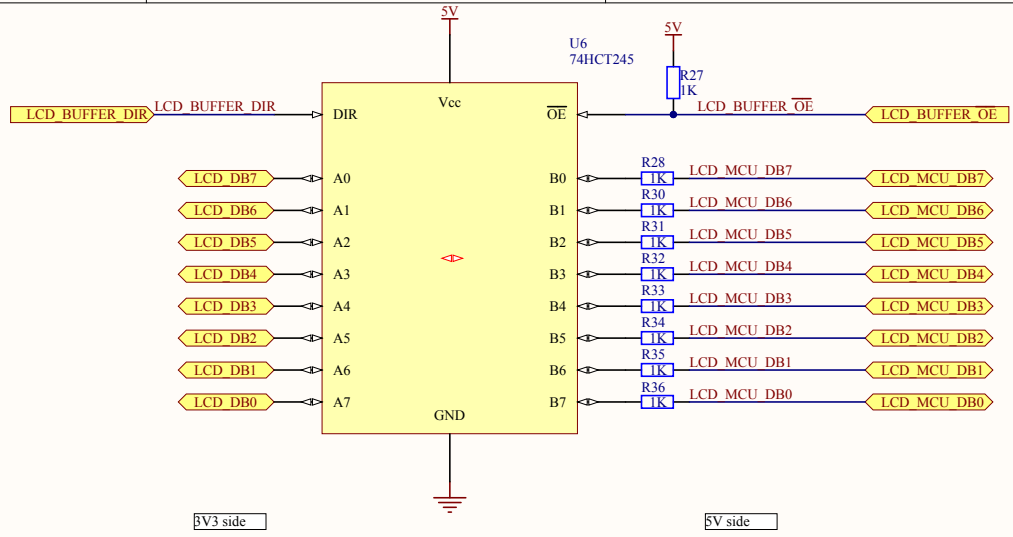
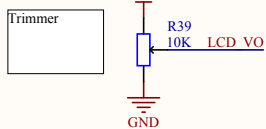
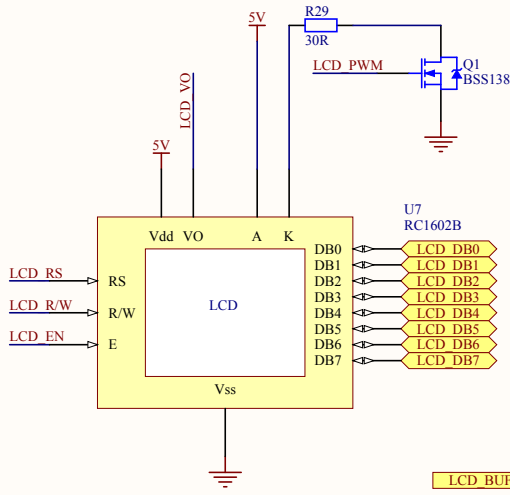
Digital Inputs



Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4					
Date:	2015.12.11.		Sheet of	Digital Input	
File:	C:\Users\...\Sheet_InputOpto.SchDoc		Drawn By:	Vizi Gábor	

LCD

A háttérvilágításhoz PWM megoldás: Tranzisztoros kapcsolás

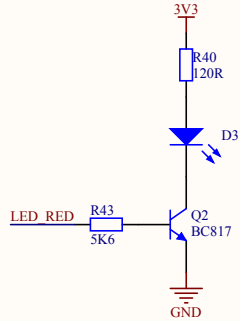


Title			Lakásautomatizálás
Size	Number	Revision	
A4		v1	
Date:	2015.12.11.	Sheet of	LCD
File:	C:\Users\... \Sheet LCD.SchDoc	Drawn By:	Vizi Gábor

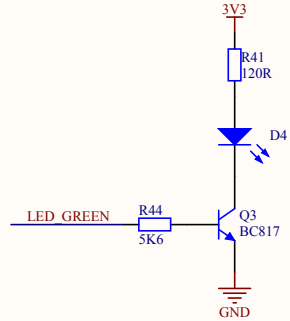
LED

LEDs

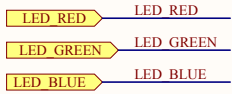
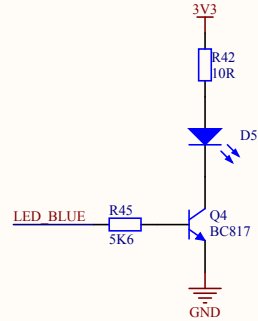
Alarm LED
Red
2,1V -> 10mA
3,3V-2,1V = 1,2V
1,2V / 10mA = 120 Ohm



All Right LED
Green
2,1V -> 10mA
3,3V-2,1V = 1,2V
1,2V / 10mA = 120 Ohm

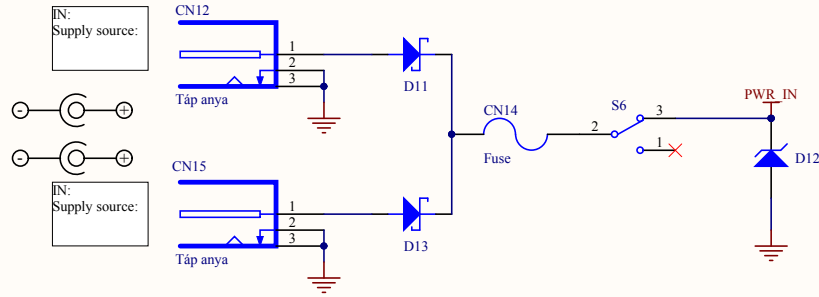


Power LED
Blue
3,4V -> 10mA
00hm

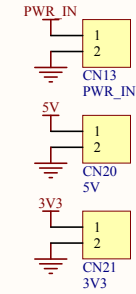


Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4			Sheet of		LED
Date:	2015.12.11.		Drawn By:		Vizi Gábor
File:	C:\Users\...Sheet_LED.SchDoc				

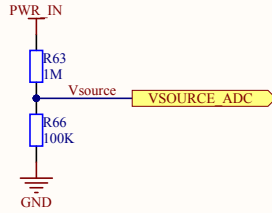
Power



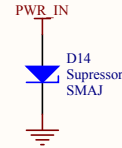
Feszültségzintek kivételése



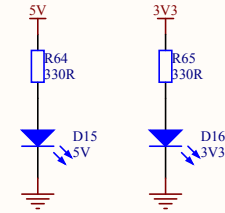
Feszültségforrás feszültségének mérésére



Szupresszor



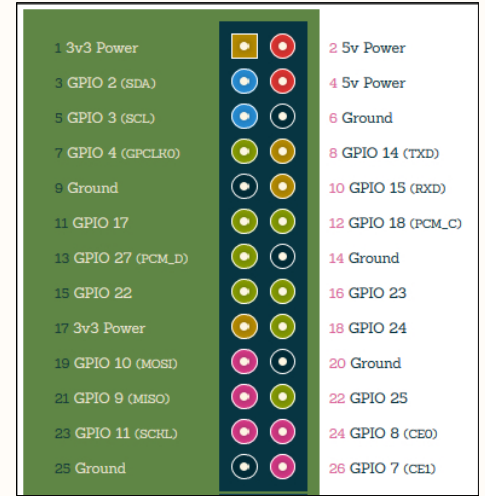
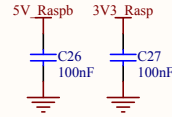
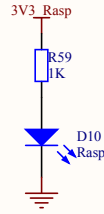
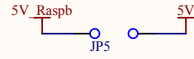
Tápljelző LED-ek.



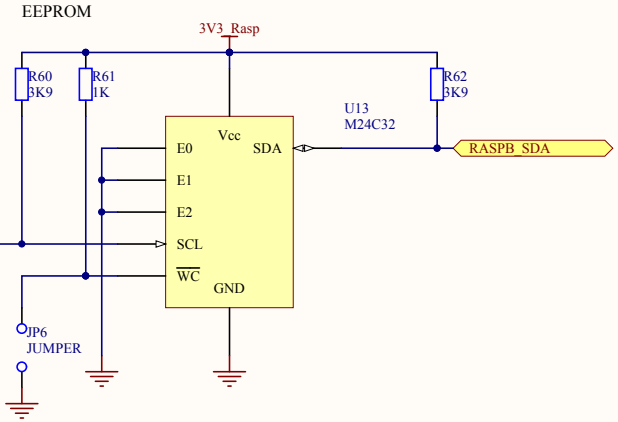
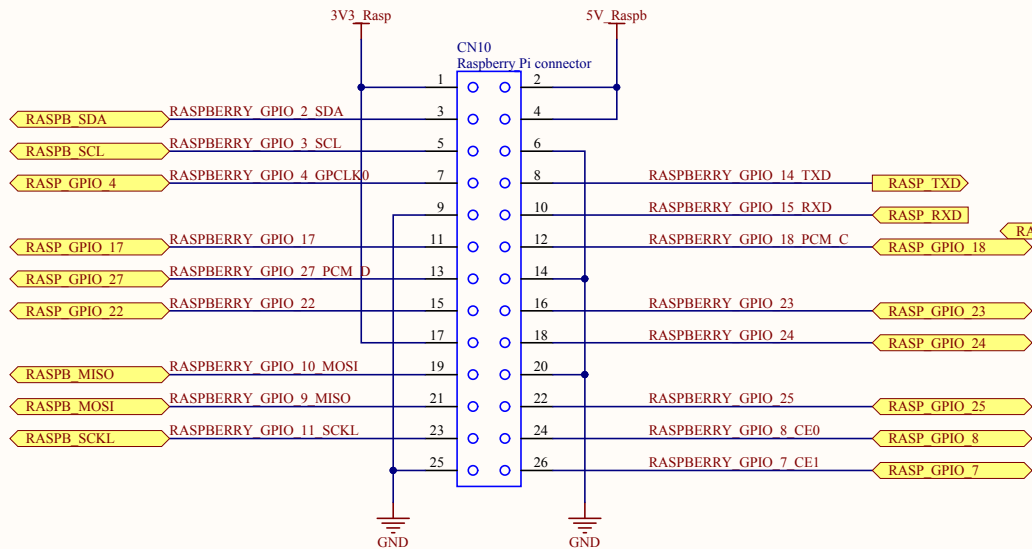
Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4			Sheet of		Power
Date:	2015.12.11.		Drawn By:		Vizi Gábor
File:	C:\Users\...Sheet Power.SchDoc				

Raspberry-Pi

5V-on keresztül kell táplálni!

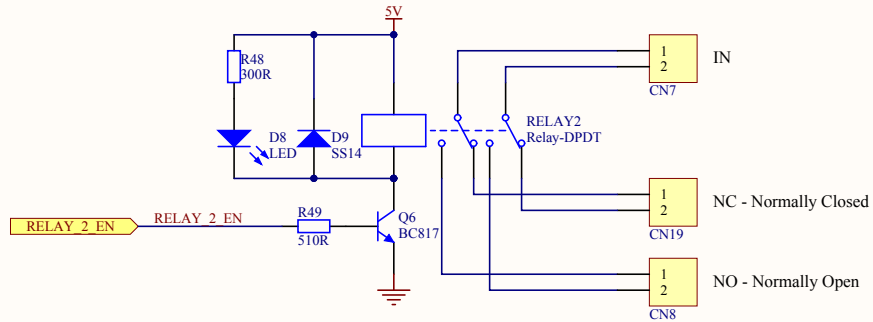
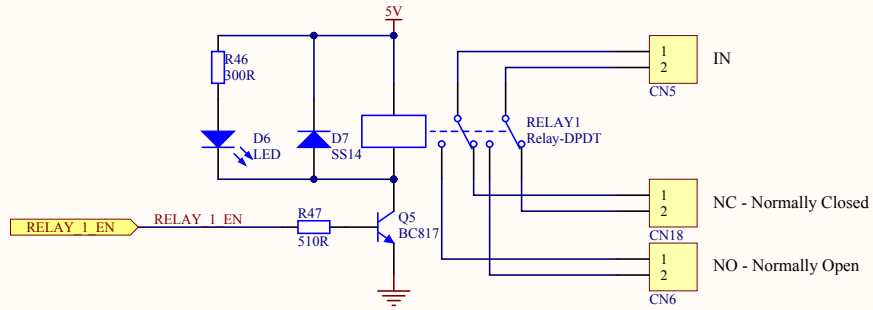


Raspberry Pi B



Title		
Lakásautomatizálás		
Size	Number	Revision
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Date:	2015.12.11.	Sheet of
File:	C:\Users\...\Sheet_Raspberry-Pi_SchDoc	Drawn By:
		Vizi Gábor

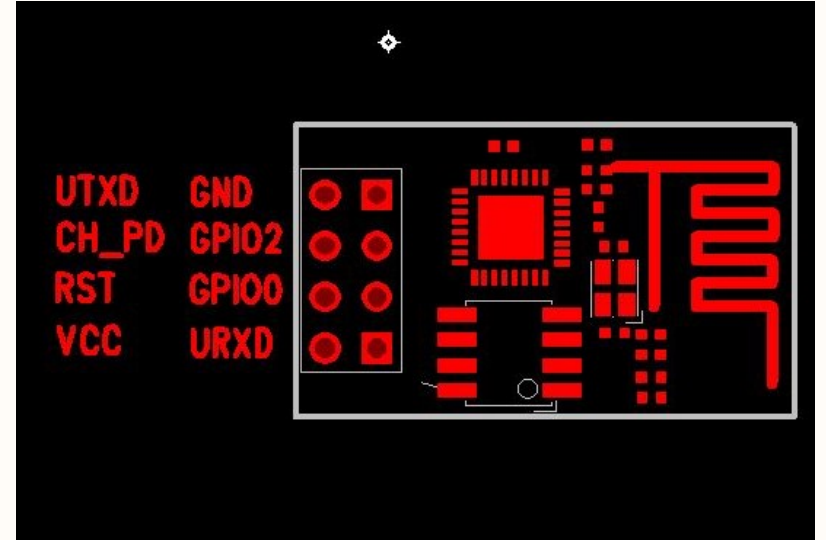
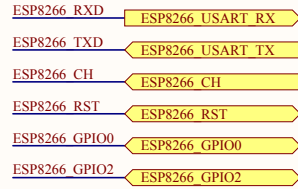
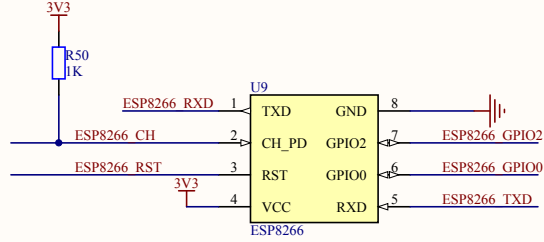
Relay



Title		
Lakásautomatizálás		
Size	Number	Revision
A4		v1
Date:	2015.12.11.	Sheet of
File:	C:\Users\...\Sheet Relay.SchDoc	Drawn By:
		Vizi Gábor

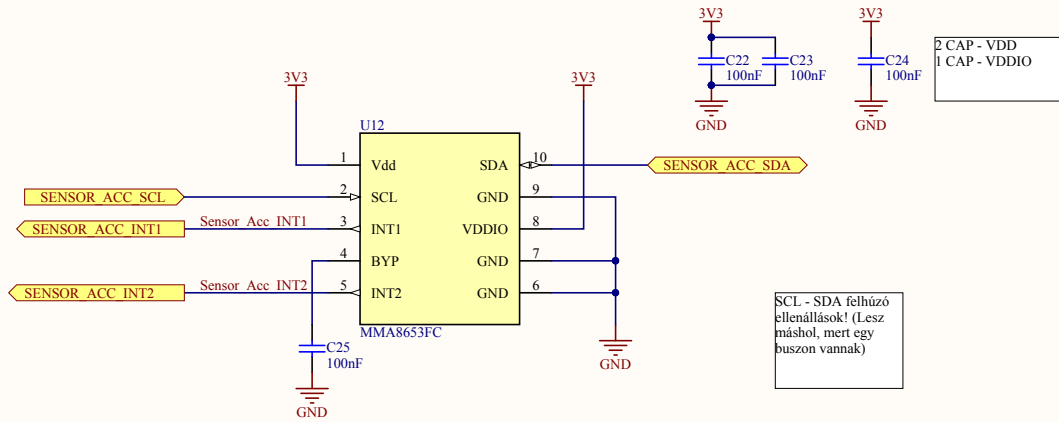
RF

ESP8266
[Link: nurdspace - ESP8266](#)



Title			Lakásautomatizálás		
Size	Number		Revision		
A4			v1		
Date:	2015.12.11.		Sheet of	RF	
File:	C:\Users\...\Sheet RF.SchDoc		Drawn By:	Vizi Gábor	

Accelerometer

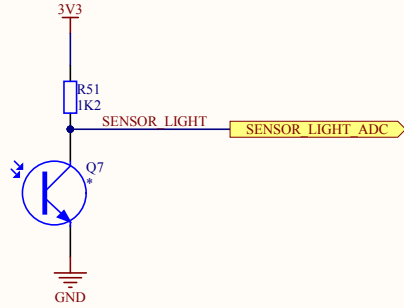


SCL - SDA felhúzó ellenállások! (Lesz máshol, mert egy buszon vannak)

2 CAP - VDD
1 CAP - VDDIO

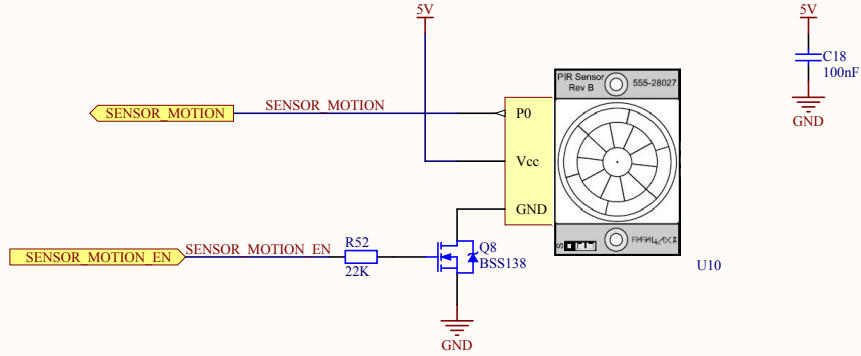
Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4					
Date:	2015.12.11.		Sheet of	Accelerometer	
File:	C:\Users\...Sheet SensorAccelerometer.SchDoc		Drawn By:	Vizi Gábor	

Light Sensor



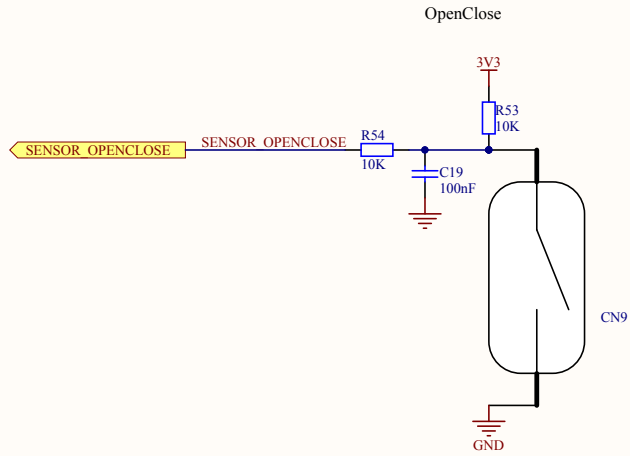
Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4					
Date:	2015.12.11.		Sheet of	Light Sensor	
File:	C:\Users\...Sheet_SensorLight.SchDoc		Drawn By:	Vizi Gábor	

Motion sensor



Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4			Sheet of		Motion sensor
Date:	2015.12.11.		Drawn By:		Vizi Gábor
File:	C:\Users\...Sheet_SensorMotion.SchDoc				

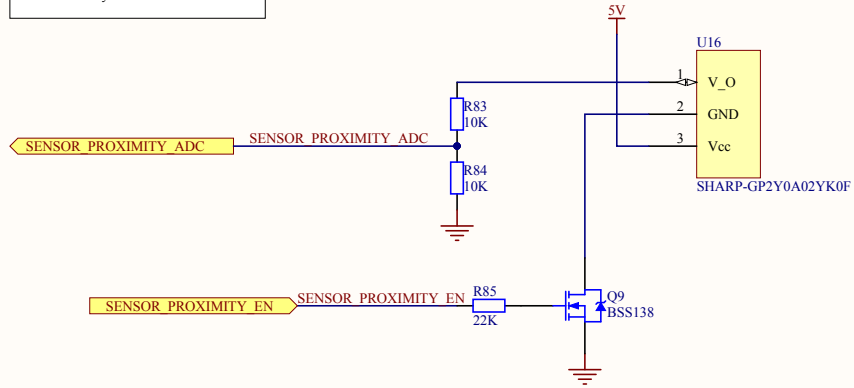
OpenClose Sensor



Title		
Lakásautomatizálás		
Size	Number	Revision
A4		v1
Date:	2015.12.11.	Sheet of
File:	C:\Users\...Sheet_SensorOpenClose.Sch	Drawn By: Vizi Gábor

Sensor - Proximity

SHARP GP2Y0A02YK0F infravörös analóg távolságszenzor 20–150cm-es méréstartománnyal



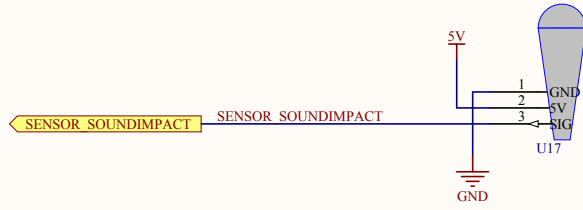
Title			Lakásautomatizálás
Size	Number	Revision	v1
A4			
Date:	2015.12.11.	Sheet of	Sensor - Proximity
File:	C:\Users\...Sheet_SensorProximity.SchDoc	Drawn By:	Vizi Gábor

Sound sensor



Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4					
Date:	2015.12.11.		Sheet of	Sound sensor	
File:	C:\Users\...\Sheet_SensorSound.SchDoc		Drawn By:	Vizi Gábor	

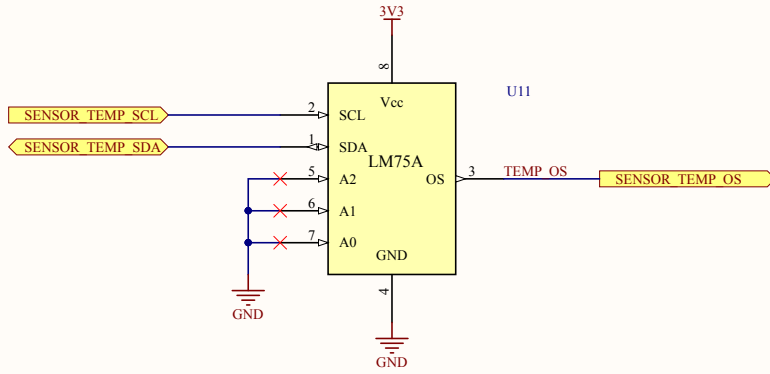
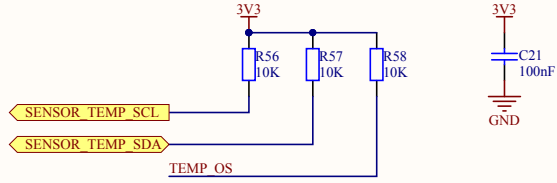
Sound impact sensor



Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4					
Date:	2015.12.11.	Sheet of	Sound impact sensor		
File:	C:\Users\...Sheet_SensorSoundImpact.Sch	Drawn By:	Vizi Gábor		

Temperature sensor

Address:
0b000

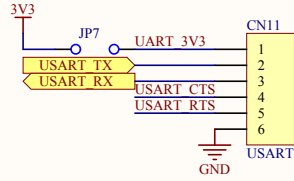


Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4					
Date:	2015.12.11.		Sheet of	Temperature sensor	
File:	C:\Users\...\Sheet_SensorTemp.SchDoc		Drawn By:	Vizi Gábor	

UART

USART

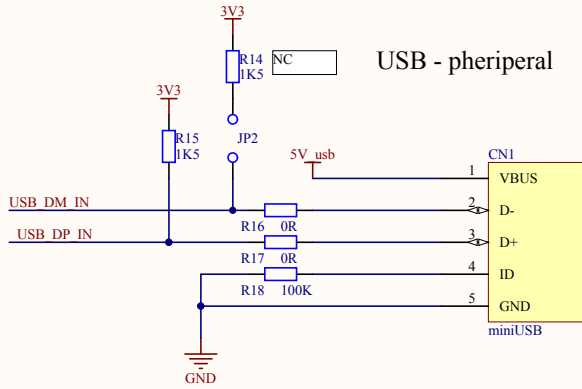
Recommended
converter:
USB 2.0 - UART
TTL 3.3V / 5V
Serial converter
CP2102



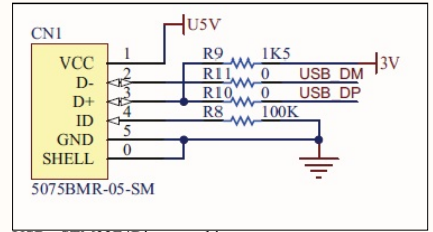
Title			Lakásautomatizálás		
Size	Number		Revision		
A4			v1		
Date:	2015.12.11.		Sheet of		UART
File:	C:\Users\...\Sheet USART.SchDoc		Drawn By:		Vizi Gábor

USB

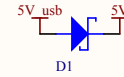
STM32L100-on csak az USB DM+DP jelek kezelhetők



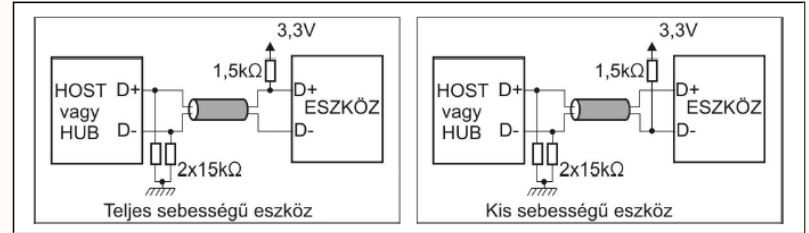
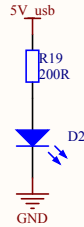
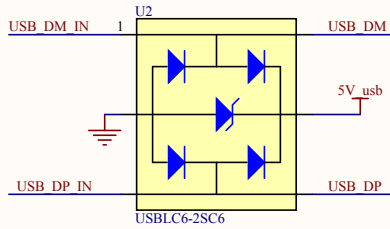
USB - peripherál



USB - STM32F4Discovery kit

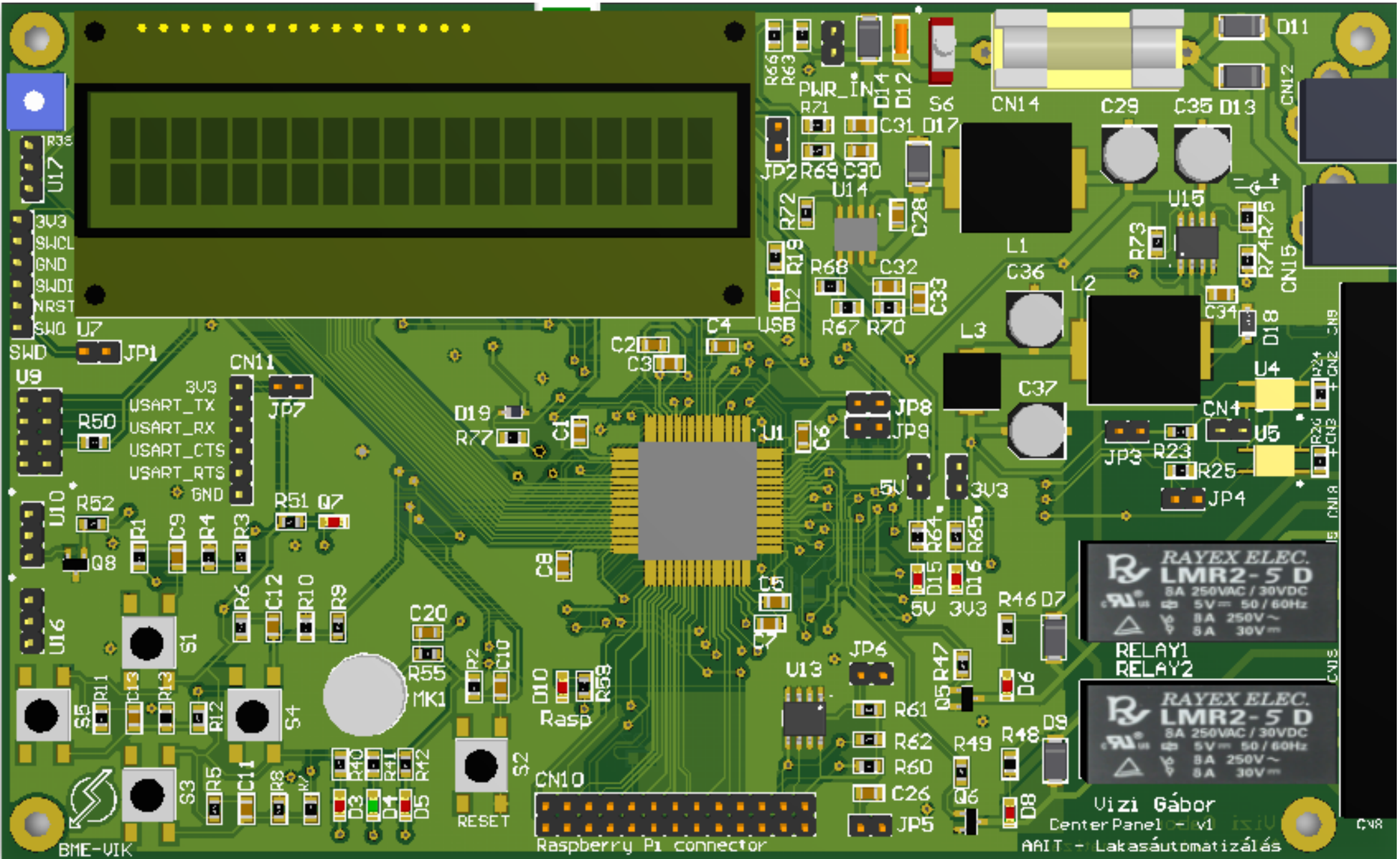


USB-n keresztül ellátható az áramkör, de vigyázni kell a terhelésre! Az USB-k maximum 1A-t szoktak kiadni!!!!



Title			Lakásautomatizálás		
Size	Number		Revision		v1
A4			Sheet of		USB
Date:	2015.12.11.	Sheet of		USB	
File:	C:\Users\...Sheet USB.SchDoc	Drawn By:		Vizi Gábor	

Comment	Description	Designator	Footprint	LibRef	Quantity
		C1, C2, C3, C4, C5, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C21, C22, C23, C24, C25, C26, C27, C28			
100nF	Capacitor		FP_0805_CAP_085	CAP	24
4.7uF	Capacitor	C6	FP_0805_CAP_085	CAP	1
2.2uF	Capacitor	C7, C8, C30, C31	FP_0805_CAP_085	CAP	4
10uF	Capacitor	C20	FP_0805_CAP_085	CAP	1
100uF	CAP - ELECT	C29, C35, C36, C37	FP_CAP_ELKO_6.3x6.3	CAP - ELECT	4
35pF	Capacitor	C32	FP_0805_CAP_085	CAP	1
6.6nF	Capacitor	C33	FP_0805_CAP_085	CAP	1
270pF	Capacitor	C34	FP_0805_CAP_085	CAP	1
6.8pF	Capacitor	C38, C39	FP_0805_CAP_085	CAP	2
20pF	Capacitor	C40, C41	FP_0805_CAP_085	CAP	2
miniUSB	miniUSB connector	CN1	FP_USB_MINIB	miniUSB	1
Connector-2	Connector, 2-Pin	CN2, CN3, CN5, CN6, CN7, CN8, CN18, CN19	FP_CONN2_TL001	Connector 2	8
Digital Inputs	Header, 2-Pin	CN4	FP_HEADER_1X2_CIRCL ED	Header 2	1
FM-102 WH	Open/Close Sensor	CN9	FP_CONN2_TL001	Sensor_OpenClose	1
Raspberry Pi connector	Header - 26 (2x13) Pin - for Raspberry Pi	CN10	FP_CONN26_2X13_TUSK E_254MM - RaspPi	HEADER_2X13_Rasbper yPi	1
USART	Header, 6-Pin	CN11	FP_HEADER_1X6_CIRCL ED	Header 6	1
Tap anya	2.5mm	CN12, CN15	FP_DC_TAP_ANVA	DC_TAP_ANVA	2
PWR_IN	Header, 2-Pin	CN13	FP_HEADER_1X2_CIRCL ED	Header 2	1
Fuse	Fuse	CN14	FP_FUSE	Fuse	1
Battery	Battery	CN16	FP_BATTERY_CR2032	Battery	1
SWD	Header, 6-Pin	CN17	FP_HEADER_1X6_CIRCL ED	Header 6	1
5V	Header, 2-Pin	CN20	FP_HEADER_1X2_CIRCL ED	Header 2	1
3V3	Header, 2-Pin	CN21	FP_HEADER_1X2_CIRCL ED	Header 2	1
SCHOTKY	Schottky diode	D1, D19	FP_SOD323-F	SCHOTKY	2
US8	LED	D2	FP_0805_LED_RED	LED	1
LED	LED	D3, D5, D6, D8	FP_0805_LED_RED	LED	4
LED	LED	D4	FP_0805_LED_GREEN	LED	1
SS14	Diode	D7, D9	FP_SMA	Diode	2
Rasp	LED	D10	FP_0805_LED_RED	LED	1
SCHOTKY	Schottky diode	D11, D13	FP_DO214AA	SCHOTKY	2
ZENER	Zener Diode	D12	FP_SOD80-MINIMELF	ZENER	1
Suppressor	Suppressor	D14	FP_SMA	Suppressor	1
5V	LED - Blue	D15	FP_0805_LED_RED	LED	1
3V3	LED - yellow	D16	FP_0805_LED_RED	LED	1
SK54	Default Diode	D17	FP_DO214AB - SMC	Diode	1
SL04	Schottky diode	D18	FP_DO-219AB	SCHOTKY	1
JUMPER	Jumper Wire	JP1, JP2, JP3, JP4, JP5, JP6, JP7, JP8, JP9	FP_CONN2_TUSKE_254 MM	JUMPER	9
7uH	Inductor	L1	FP_IND_12.7-12.7mm	IND	1
10uH	Inductor	L2	FP_IND_12.7-12.7mm	IND	1
1.0uH	Inductor	L3	FP_IND_3.3uH_S06043 R3MLB	IND	1
Supply polarity	Logo - Supply polarity	LOGO1	FP_LOGO_SUPPLY_POLA RITY	LOGO_Supply-Polarity	1
LOGO - VIK	LOGO - VIK	LOGO2	FP_LOGO_VIK_v2_TOP-LAYER	LOGO_VIK	1
Supply polarity	Logo - Supply polarity	LOGO3	FP_LOGO_SUPPLY_POLA RITY_Top-layer	LOGO_Supply-Polarity	1
LOGO - VIK	LOGO - VIK	LOGO4	FP_LOGO_VIK_v2	LOGO_VIK	1
BCM976794.5-40	Microphone	MK1	FP_MICROPHONE	Microphone	1
BSS138	N-Channel Power MOSFET	Q1, Q8, Q9	FP_SOT23-3	NMOS-2	3
BC817	NPN General-purpose Transistor	Q2, Q3, Q4, Q5, Q6	FP_SOT23-3	BC817	5
	NPN Phototransistor	Q7	FP_0805_PHOTONPN	Photo NPN	1
100R	Resistor	R1, R5, R6, R11	FP_0805_RES	RES	4
100K	Resistor	R2, R18, R66	FP_0805_RES	RES	3
330R	Resistor	R3, R7, R9, R12, R64, R65	FP_0805_RES	RES	6
220R	Resistor	R4, R8, R10, R13, R24	FP_0805_RES	RES	5
1K5	Resistor	R14, R15	FP_0805_RES	RES	2
0R	Resistor	R16, R17, R76, R78, R79, R81	FP_0805_RES	RES	6
200R	Resistor	R19	FP_0805_RES	RES	1
10K	Resistor	R20, R21, R22, R53, R54, R56, R57, R58, R82, R83, R84	FP_0805_RES	RES	11
2K	Resistor	R23, R25	FP_0805_RES	RES	2
510R	Resistor	R26, R47, R49	FP_0805_RES	RES	3
1K	Resistor	R27, R28, R30, R31, R32, R33, R34, R35, R36, R37, R38, R50, R55, R59, R61, R80	FP_0805_RES	RES	16
30R	Resistor	R29	FP_0805_RES	RES	1
10K	Potentiometer	R39	FP_TRIMMER_CA6V-STD	RES_POT	1
120R	Resistor	R40, R41	FP_0805_RES	RES	2
10R	Resistor	R42	FP_0805_RES	RES	1
5K6	Resistor	R43, R44, R45	FP_0805_RES	RES	3
300R	Resistor	R46, R48	FP_0805_RES	RES	2
1K2	Resistor	R51	FP_0805_RES	RES	1
22K	Resistor	R52, R85	FP_0805_RES	RES	2
3K9	Resistor	R60, R62	FP_0805_RES	RES	2
1M	Resistor	R63	FP_0805_RES	RES	1
200K	Resistor	R67	FP_0805_RES	RES	1
39K	Resistor	R68, R74	FP_0805_RES	RES	2
150K	Resistor	R69	FP_0805_RES	RES	1
15K	Resistor	R70	FP_0805_RES	RES	1
36K	Resistor	R71	FP_0805_RES	RES	1
162K	Resistor	R72	FP_0805_RES	RES	1
0R15	Resistor	R73	FP_0805_RES	RES	1
24K	Resistor	R75	FP_0805_RES	RES	1
750R	Resistor	R77	FP_0805_RES	RES	1
Relay-DPDT	Dual-Pole Dual-Throw Relay	RELAY1, RELAY2	FP_RELAY_LM2	Relay-DPDT	2
SW-PB	Switch	S1, S2, S3, S4, S5	FP_FSMISMA_button	SW-PB	5
Switch	SW - SPDT	S6	FP_TSM_3X1	SW-SPDT	1
STM32F407VGT6	STM32F4xx - 100pin	U1	FP_ICFP100_T52FF50R 1600X1600X160-100N	STM32F4xx - 100pin	1
USBLC6-25C6	USBLC6-2	U2	FP_SOT23-6L_S0T95P280X145-6N	USBLC6-2	1
S25FL204K0TMF041	FLASH - SPI - 8pin	U3	FP_SOIC_S0A008_150m il	FLASH - SPI - 8pin	1
Photocoupler	Photocoupler - 4pin	U4, U5	FP_DIP4-TLP181	Photocoupler	2
74HCT245	Buffer - 2 line 8 bit - 3-state	U6	FP_SO20	Buffer - 2line 8bit 20pin	1
RC1602B	LCD - 16x2 char	U7	FP_LCD_body_16x2	LCD - 16x2 char	1
74HCT244	Buffer - 1 line 8 bit - 3 state	U8	FP_SO20	Buffer - 1line 8bit 20pin	1
ESP8266	Wifi module - ESP8266	U9	FP_ESP8266	WiFi-ESP8266	1
PARALLAX_555-28027	Sensor_Motion_PIR	U10	FP_HEADER_1X3_CIRCL ED	Sensor_Motion_PIR	1
LM75AD	Sensor - Temperature - digital	U11	FP_SO8	Sensor_TemperatureDi gital	1
MMA8653FC	Accelerometer - MMA8653FC - 10 pin - I2C	U12	FP_DFN_10PIN_2x4x1m m	ACCELEROMETER_MMA8653FC	1
M24C32	EEPROM - I2C - 8pin	U13	FP_SO8	EEPROM - I2C - 8pin	1
TP554340	Voltage Converter	U14	FP_SO8_TP554339E	TP554340	1
MC33063A	MC33063A - power IC	U15	FP_SO8	MC33063A	1
SHARP-GP2Y0A02YK0F	Infrared sensor	U16	FP_HEADER_1X3_CIRCL ED	Sensor_InfradRed	1
Sound Impact Sensor (#29132)	Sensor - Sound Impact	U17	FP_HEADER_1X3_CIRCL ED	Sensor_SoundImpact	1
32.768kHz	Crystal Oscillator	X1	FP_CRYSTAL_91SMNR	XTAL	1
8MHz	Crystal Oscillator	X2	FP_CRYSTAL_HC49_SMD	XTAL	1



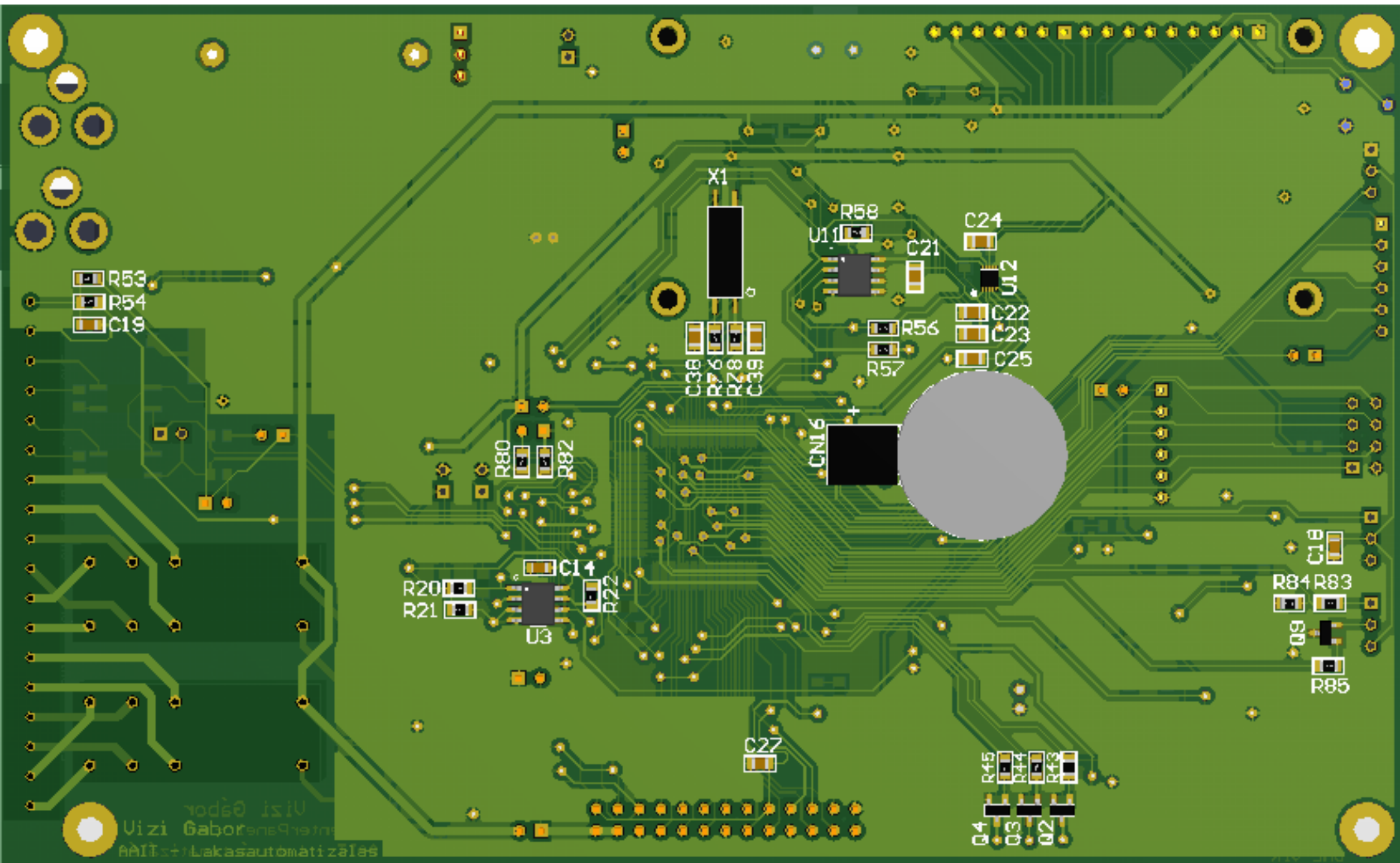
Raspberry Pi connector

RAYEX ELEC.
LMR2-5 D
8A 250VAC / 30VDC
5V ~ 50 / 60Hz
8A 250V ~
8A 30V ~

RELAY1
RELAY2

RAYEX ELEC.
LMR2-5 D
8A 250VAC / 30VDC
5V ~ 50 / 60Hz
8A 250V ~
8A 30V ~

Uizi Gábor
Center Panel v1
AAIT - Lakasautomatizálás



R53
R54
C19

X1
C98
R76
R78
C99

R58
U11
C21
C24
U12
C22
C23
C25
R56
R57

R80
R82

R20
R21
C14
U3
R22

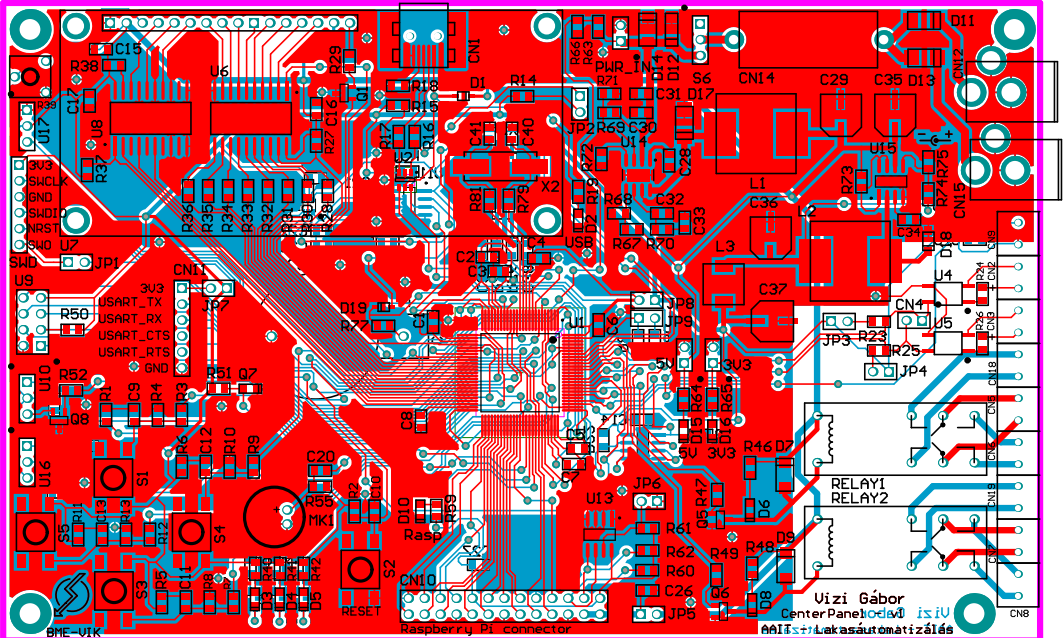
CN16

C19
R84
R83
U9
R85

R45
R44
R43
U4
U3
U2

Uzi Gabor
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2023-01-01



BME-UIK

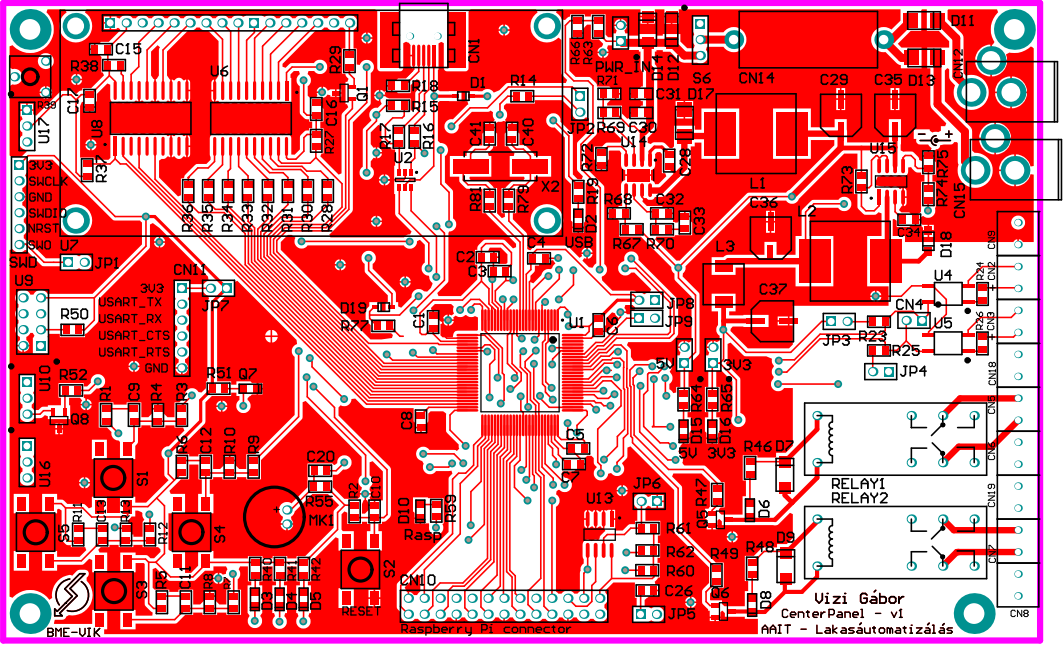
Raspberry Pi connector

Vizi Gábor
CenterPanel

AAITs+Lakasautomatizálás



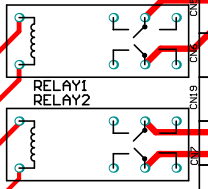
CN8



3V3
SWCLK
GND
SWDIO
NRST
SW40
U7
JP1
U9
R50
3V3
USART_RX
USART_CTS
USART_RTS
GND
U10
R52
R1
C9
R4
R3
R51
Q7
S1
R6
C12
R10
R9
R5
C11
R8
R40
R41
R42
S3
S4
S2
RESET

BME-188

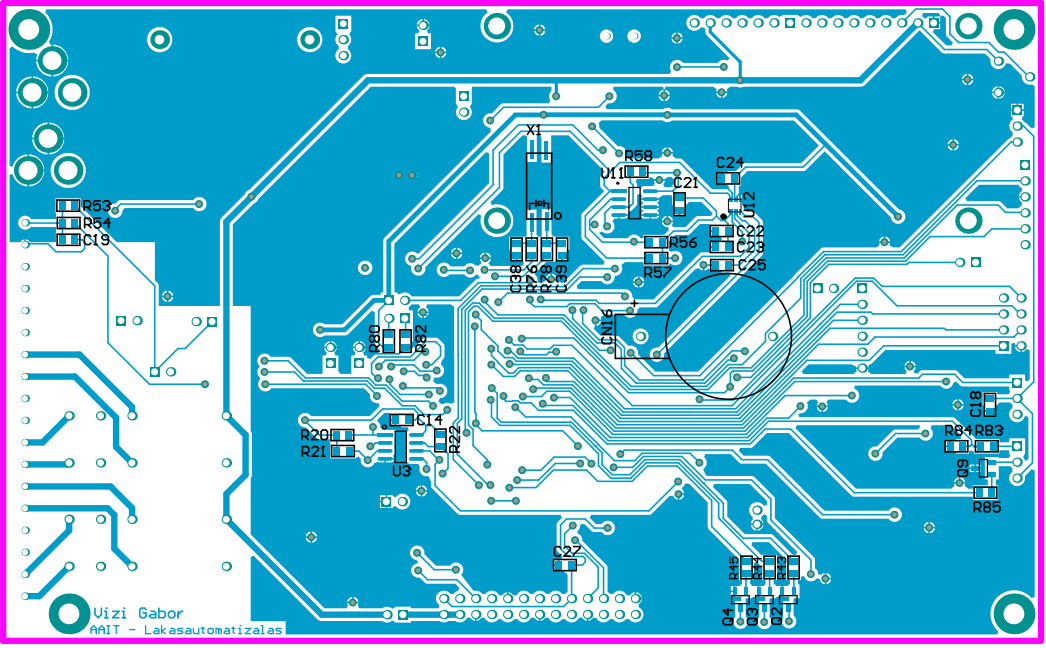
Raspberry Pi connector



RELAY1
RELAY2

Uizi Gábor
CenterPanel - v1
AAIT - Lakasautomatizálás

CN8



R53
R54
C19

X1

R58
U11
C21
C24
U12
C22
C23
R56
R57
C25

C38
R76
R78
C39

CN16

R80
R82

R20
R21
U3
C14
R22

C27

C18
R84
R83
Q9
R85

Q4
Q3
Q2
R45
R44
R43