

REVISION	DESCRIPTION	DATE	ECO	ENGINEER
0.1.0	Prototype	10/17/2022	0000	Podlesnyi V.S.

USB

ESP

INPUTS


MCU

POWER

FAN

TEMP

RELAYS

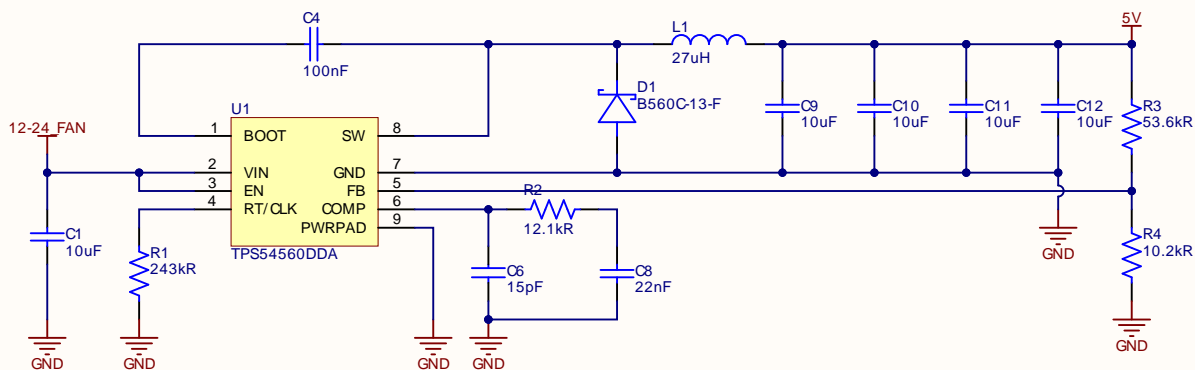
Title: Overview			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:23	Sheet 1 of 14		
File: Industrial-Controller Overview.SchDoc				

12-24_FAN

5V

3V3

12V Domain
600 mA



5V domain
1.2A

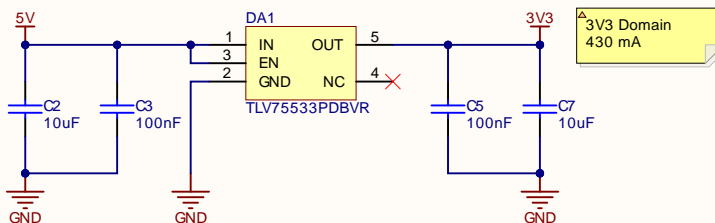
Inductor ripple current:
Iout max = 1.2A
L = 27 uH
Vin max = 24B
Vout = 5B
f = 400 kHz
dIL = 0.37 A = 30% Iout max

Inrush current:
Cout = 40 uF
Vout = 5 V
tss = 3 ms
linrush = 0.07A

Inductor peak current:
Iout max = 1.2 A
dIL = 0.37 A
linrush = 0.07A
IL peak = 1.2A + 0.37A/2 + 0.07A = 1.46 A

Inductor saturation current:
IL peak = 1.5 A
IL sat = 1.5 * IL peak = 1.5 * 1.5 A = 2.2 A

Cout:
dVout = 1%Vout = 0.05 V
dIL = 30%Iout = 0.45 A
f = 400 kHz
Cout = 2.8 uF



3V3 Domain
430 mA

Title: Power

Project: Industrial Controller

Size A Number: 0000-0000

Date: 26.10.2022 Time: 8:55:23

File: Industrial-Controller Power.SchDoc

Revision 0.1.0

Sheet 2 of 14

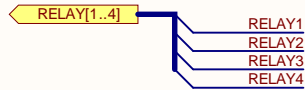
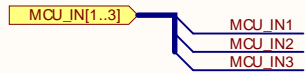
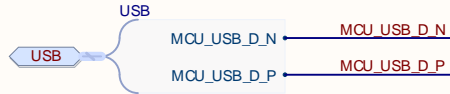
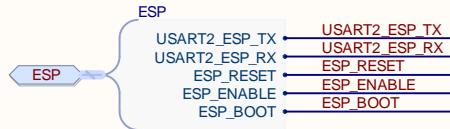
MRobot, LCC
nab. reki Karpovki, d. 5/3E
Saint-Petersburg, 197022
Ph: +7 (911) 701-51-99

Engineer:
Podlesnyi Vasilii

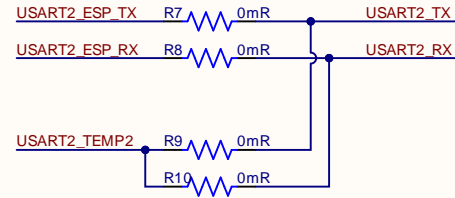
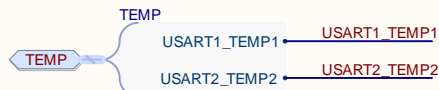
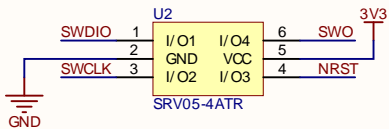
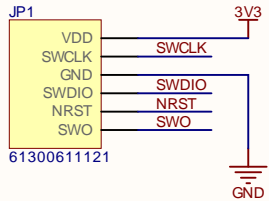


www.mrobots.ru

3V3

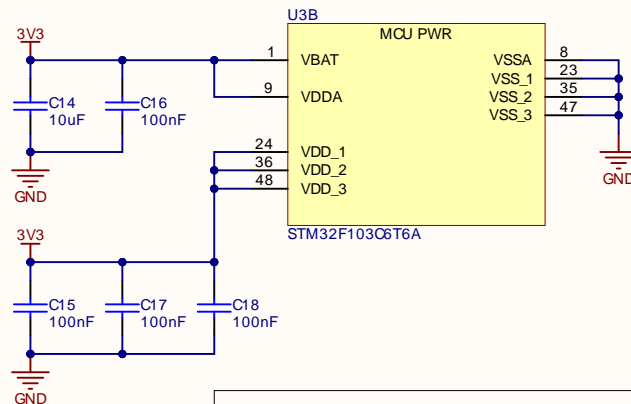
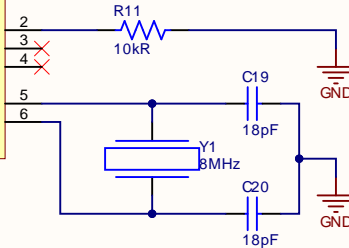
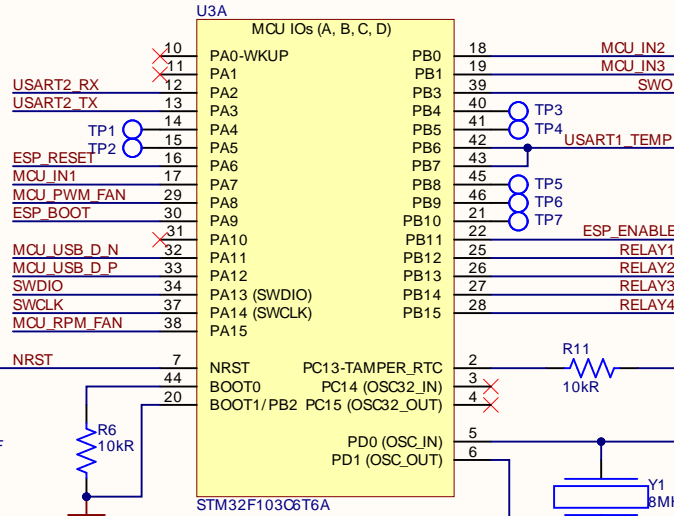
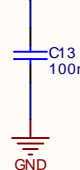
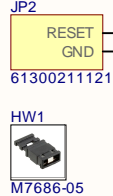



SWD



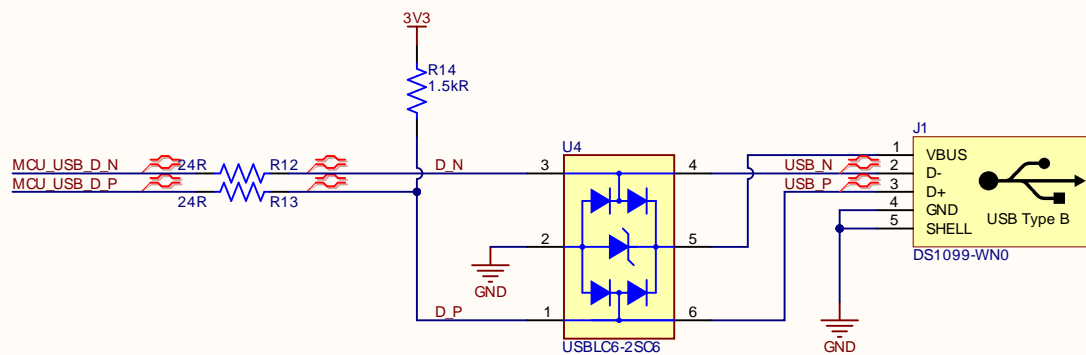
RESET

"ON" - RESET
"OFF" - NOP



Title: MCU			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:23	Sheet 3 of 14		
File: Industrial-Controller MCU.SchDoc				

3V3



Title: USB

Project: Industrial Controller

Size A

Number: 0000-0000

Revision 0.1.0

Date: 26.10.2022 Time: 8:55:24

Sheet 4 of 14

File: Industrial-Controller_USB.SchDoc

MRobot, LCC
nab. reki Karpovki, d. 5/3E
Saint-Petersburg, 197022
Ph: +7 (911) 701-51-99

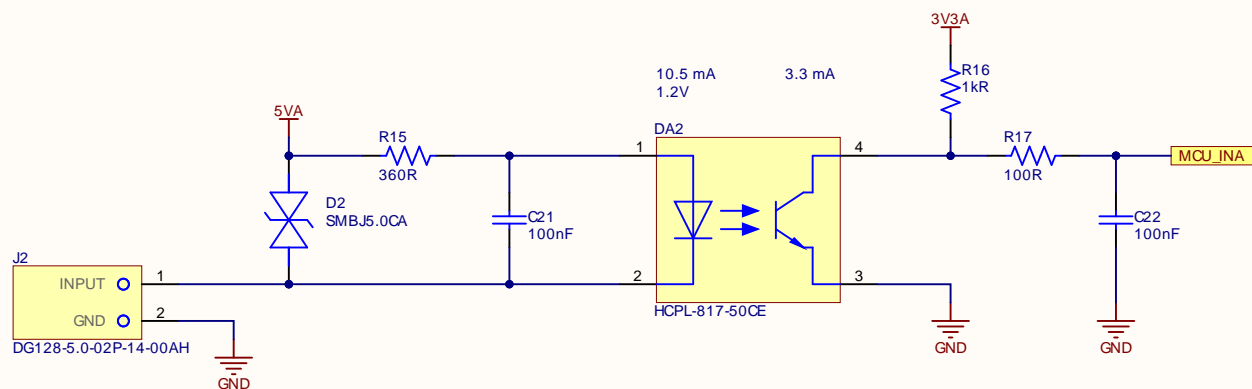
Engineer:
Podlesnyi Vasilii




www.mrobots.ru

5VA

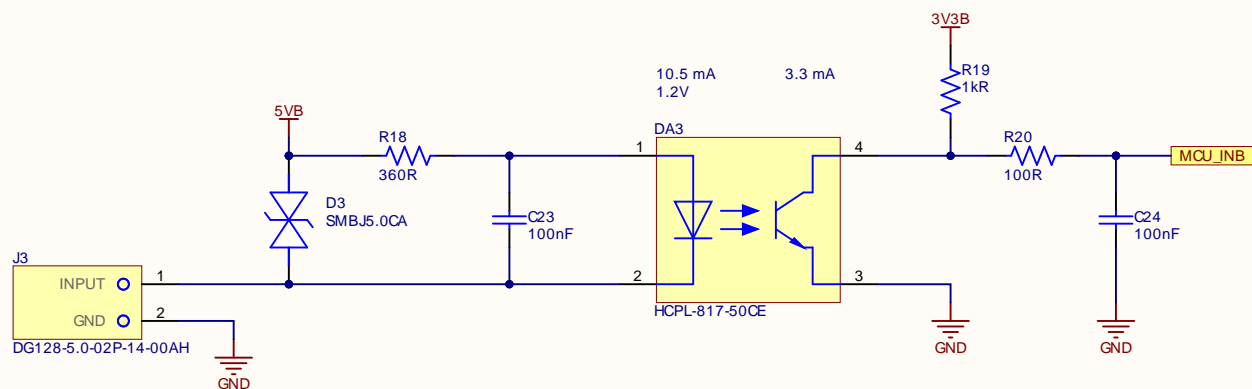
3V3A




Title: Isolated inputs			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:24	Sheet 5 of 14		
File: Industrial-Controller Input.SchDoc				

5VB

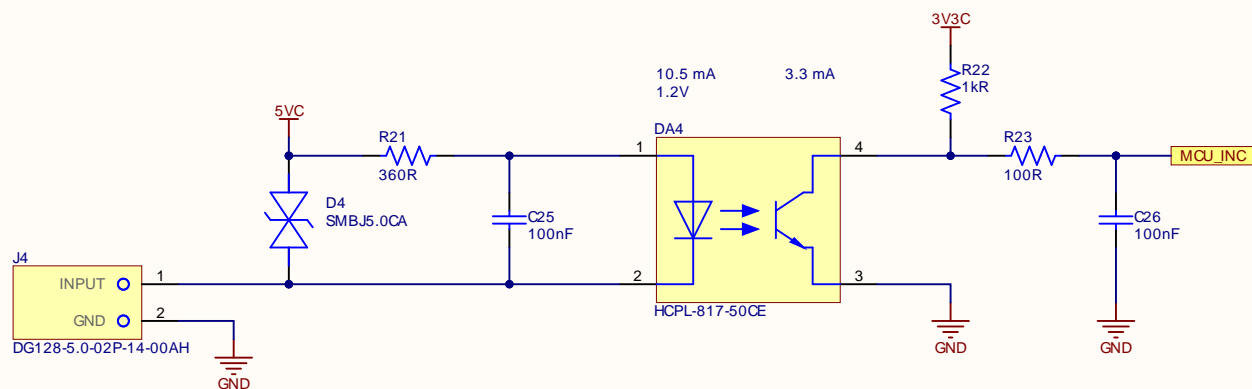
3V3B




Title: Isolated inputs			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:25	Sheet 6 of 14		
File: Industrial-Controller Input.SchDoc				

5VC

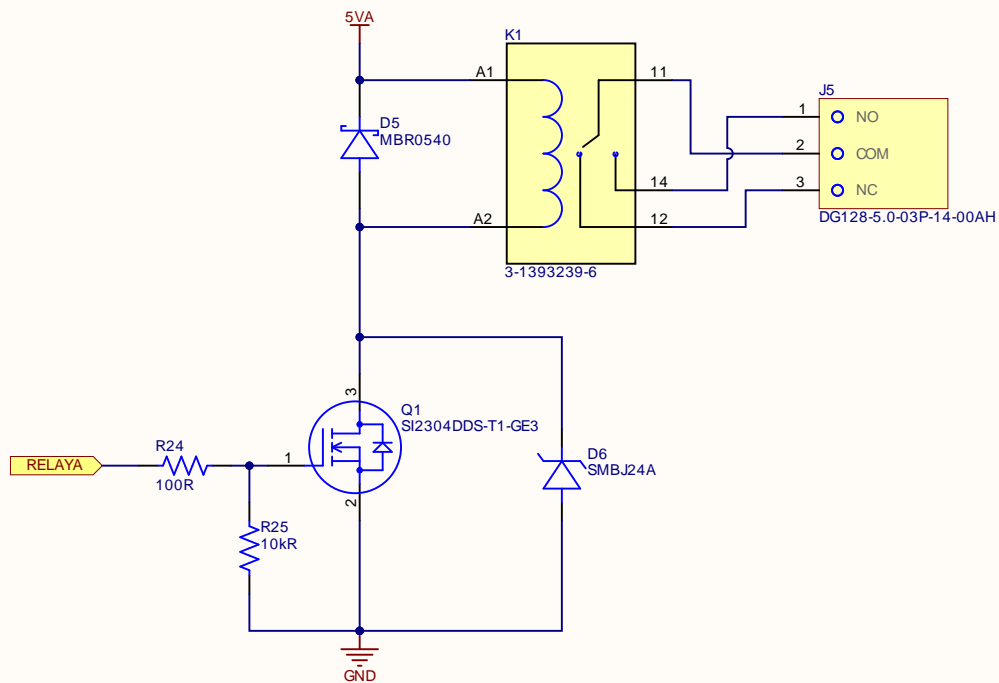
3V3C




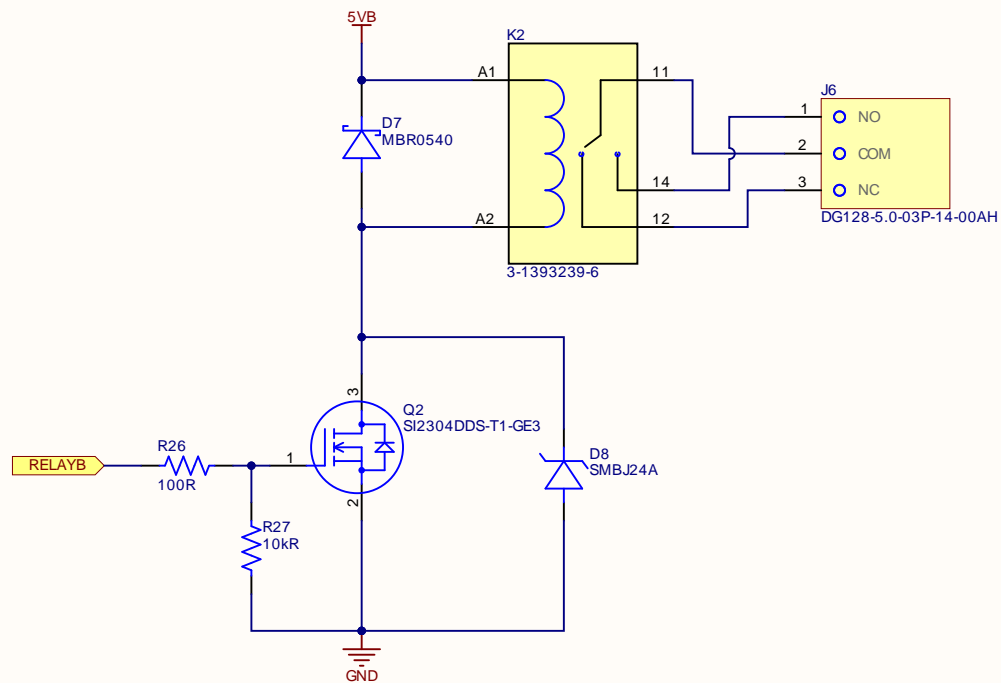
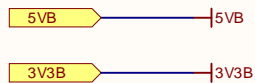
Title: Isolated inputs			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasili	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:25	Sheet 7 of 14		
File: Industrial-Controller Input.SchDoc				


5VA

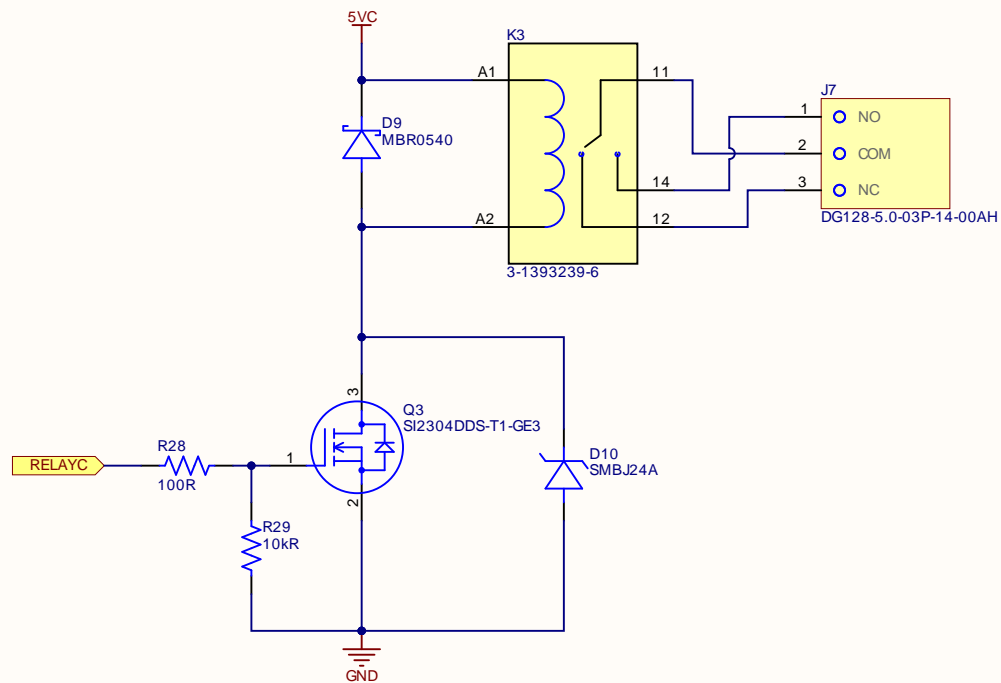
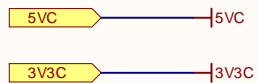
3V3A




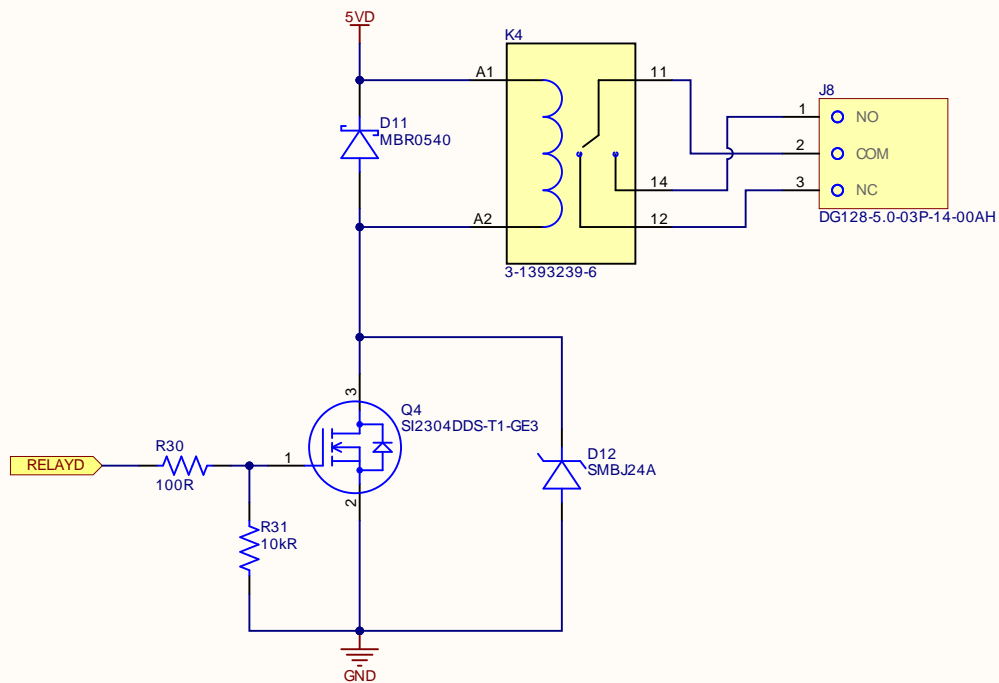
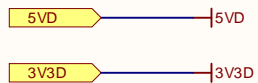
Title: Relays			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:25	Sheet 8 of 14		
File: Industrial-Controller_Relay.SchDoc				




Title: Relays			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:25	Sheet 9 of 14		
File: Industrial-Controller Relay.SchDoc				

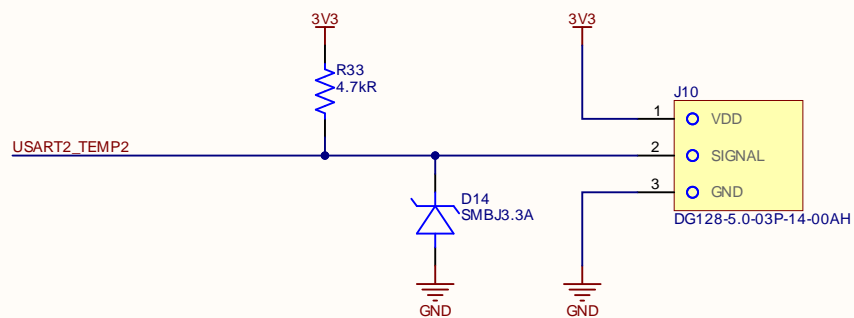
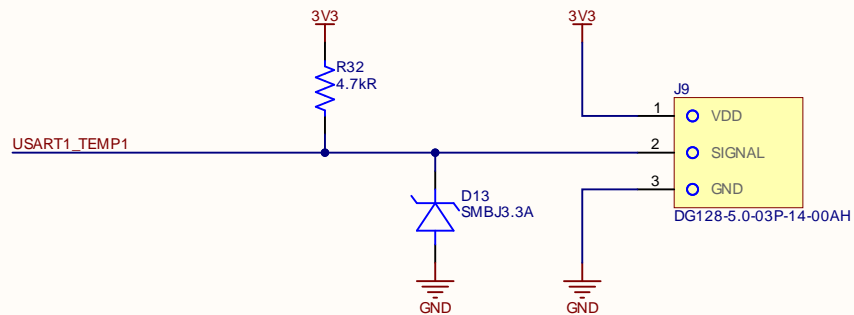


Title: Relays			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022	Time: 8:55:26	Sheet 10 of 14		
File: Industrial-Controller_Relay.SchDoc				



Title: Relays			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	www.mrobots.ru
Date: 26.10.2022 Time: 8:55:26		Sheet 11 of 14		
File: Industrial-Controller_Relay.SchDoc				

3V3



Title: Temp sensor

Project: Industrial Controller

Size A

Number: 0000-0000

Revision 0.1.0

Date: 26.10.2022 Time: 8:55:26

Sheet 12 of 14

File: Industrial-Controller_Temperature.SchDoc

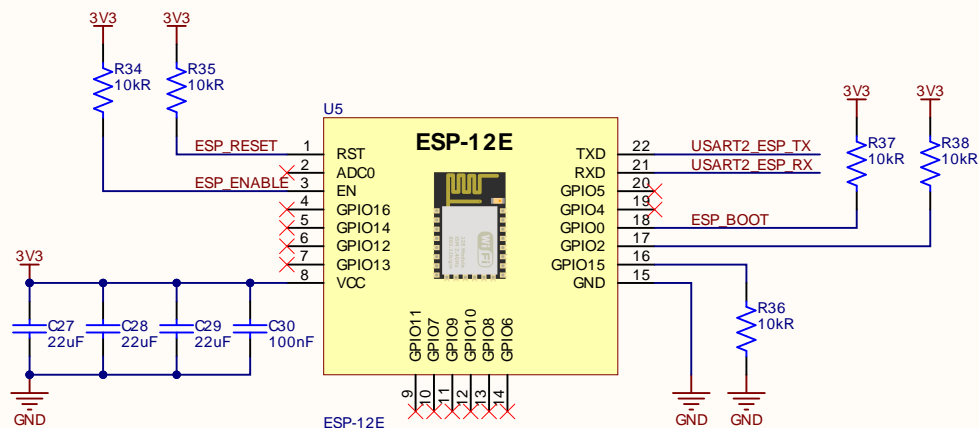
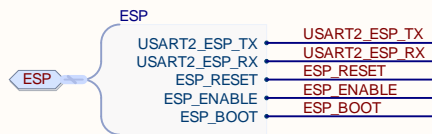
MRobot, LCC
nab. reki Karpovki, d. 5/3E
Saint-Petersburg, 197022
Ph: +7 (911) 701-51-99

Engineer:
Podlesnyi Vasilii




www.mrobots.ru

3V3



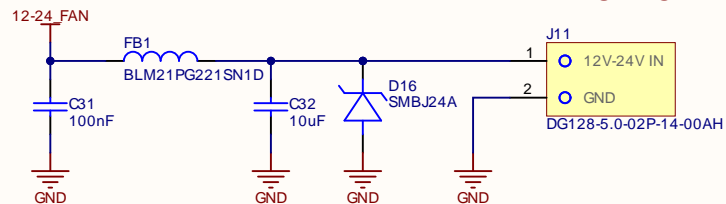
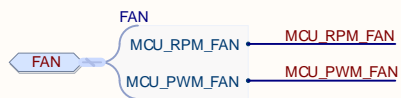
BOOT MODES:

- 1) UART BOOTLOADER
GPIO15 - "0" GPIO0 - "0" GPIO2 - "1"
- 2) FLASH BOOT SKETCH
GPIO15 - "0" GPIO0 - "1" GPIO2 - "1"

Title: ESP8266			MRobot, LCC nab. reki Karpovki, d. 5/3E Saint-Petersburg, 197022 Ph: +7 (911) 701-51-99	 www.mrobots.ru
Project: Industrial Controller				
Size A	Number: 0000-0000	Revision 0.1.0	Engineer: Podlesnyi Vasilii	
Date: 26.10.2022	Time: 8:55:27	Sheet 13 of 14		
File: Industrial-Controller_ESP8266.SchDoc				

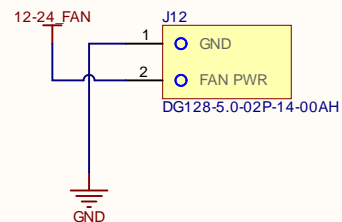
12-24_FAN

3V3

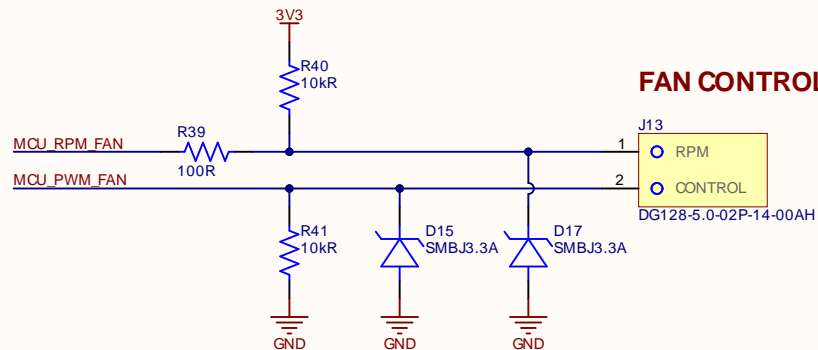


INPUT POWER

FAN POWER



FAN CONTROL



Title: Fan

Project: Industrial Controller

Size A

Number: 0000-0000

Revision 0.1.0

Date: 26.10.2022 Time: 8:55:27

Sheet 14 of 14

File: Industrial-Controller_Fan.SchDoc

MRobot, LCC
nab. reki Karpovki, d. 5/3E
Saint-Petersburg, 197022
Ph: +7 (911) 701-51-99

Engineer:
Podlesnyi Vasilii



www.mrobots.ru