

# L-Titrator MAIN BOARD

Version 0.2

## SCHEMATICS PAGE DESCRIPTIONS

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P02: BLOCK DIAGRAM  
P03: REVISION HISTORY  
P04: DAC  
P05: POWER/PARALLEL\_IN\_OUT  
P06: TEMP/24VOUT/BLDC  
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## INPUT POWER SUPPLY RATING

+24VDC: INPUT  
+12VDC : 1A (Max)  
+7VDC : not use  
+A5V : 100mA (Max)  
+D5V : 800mA (Max)  
+3.3VDC : 800mA (Max)

## INDICATION LED for SYSTEM POWER

LED5 : RED(D3.3V)

## BOARD TYPE & REVISION

P09 : TYPE, REVISION

## TOP SILK

ATiK  
Logo

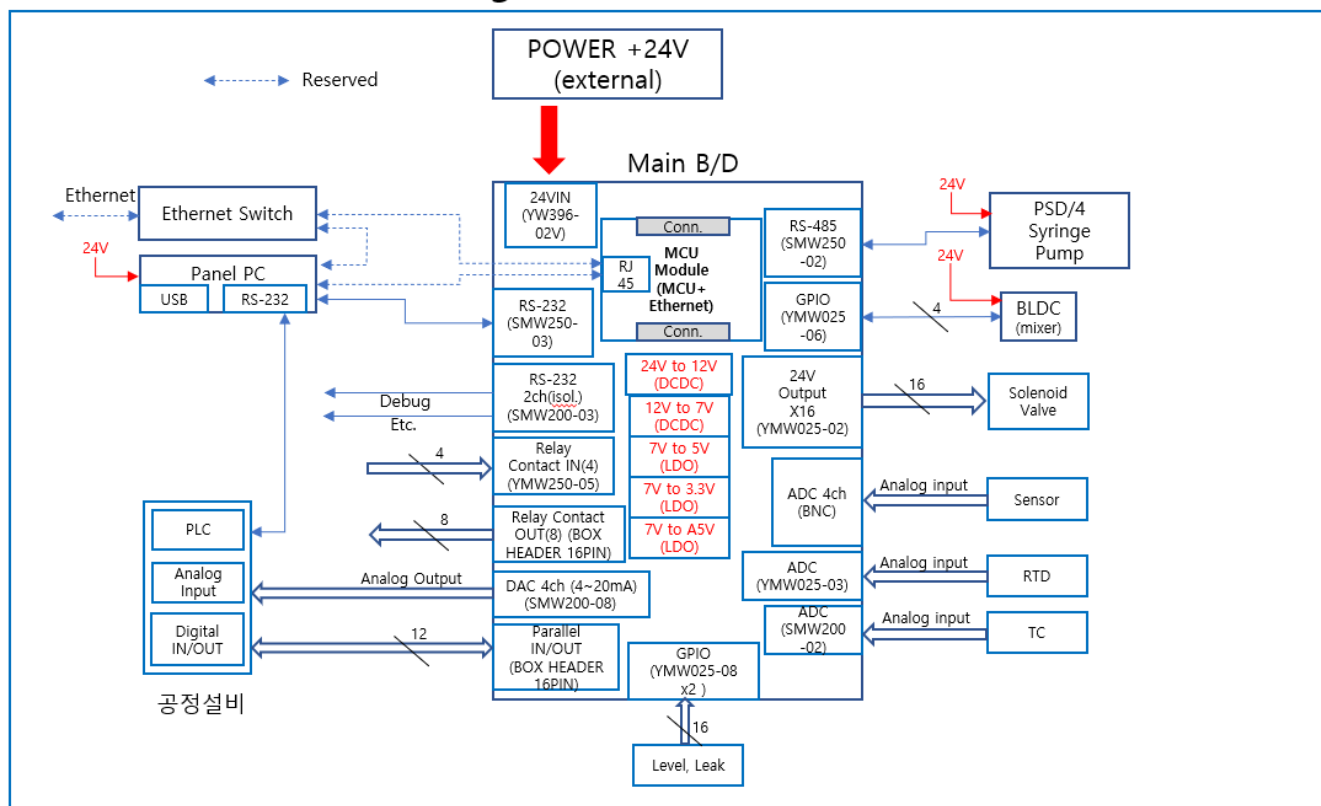
ATiK Co., Ltd  
ASS'Y: L-Titrator Main Rev0.2  
Date : 2022.04.01  
S/N :

Bottom Silk  
- L-Titrator Main, Rev0.2

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2022.04.26

## L-Titrator Rev0.2 Block Diagram



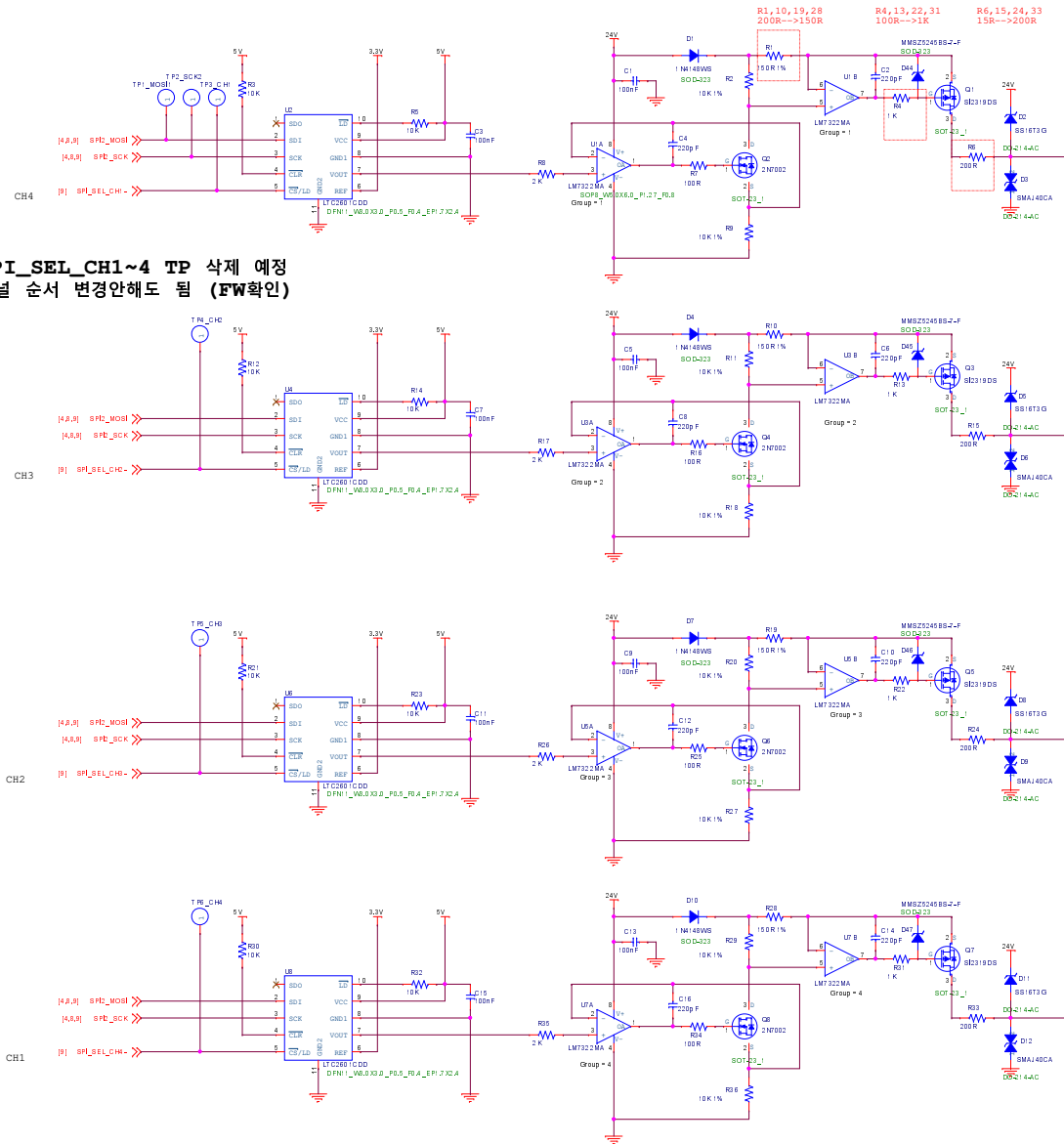
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## Revision History

REVISION	DATE	DESCRIPTION
Rev 0.1	2021.11.17	new design
	2021.11.19	1차 DR 진행 후 업데이트
	2021.11.29	2차 DR 진행 후 업데이트
Rev 0.2	2022.01.19	DAC part 저항 변경, 7V adj 저항값(오기입) 변경
	2022.03.08	7V,A5V TP 추가 ,TC 파트 R119 -> 0R , C40 -> NA
	2022.03.08	BLDC파트 level shifter 부품 변경
	2022.04.26	DAC , 4~20mA 파트 제너다이오드 추가 및 시정수 수정
	2022.04.26	ADC 파트 레퍼런스 전압 및 Gain 수정
	2022.05.17	BLDC in/out ESD protection

## 4-20mA Output ch #1~ #4

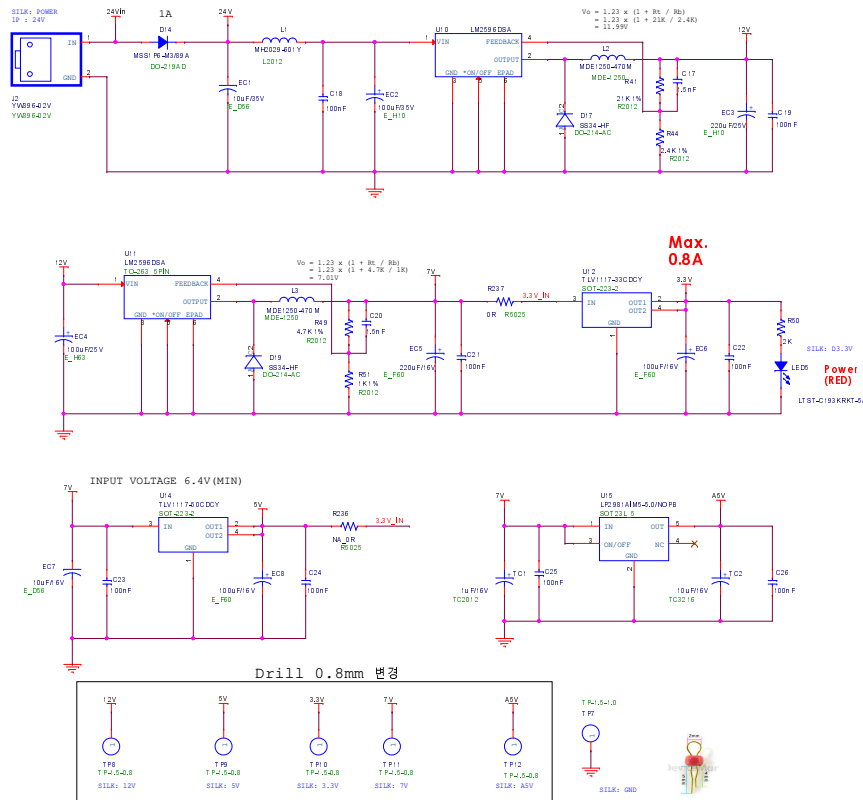
## DAC 4채널 공급설비와 연결 APMi ISOLATION 적용 안됨



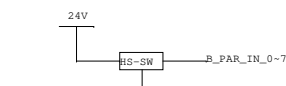
R, L, C, LED 사이즈 미표기 --> 1608 (Metric)

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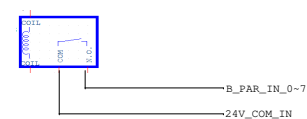
## POWER SUPPLY



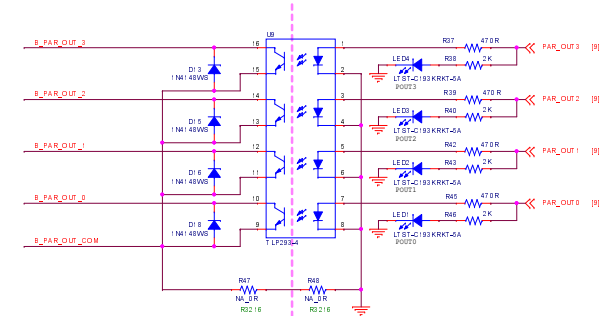
24V DRIVE INPUT 경우(Default, Isolation )  
Ass'y : R75  
N.A : R56, R57, R81, R82, R64-67, R77-80



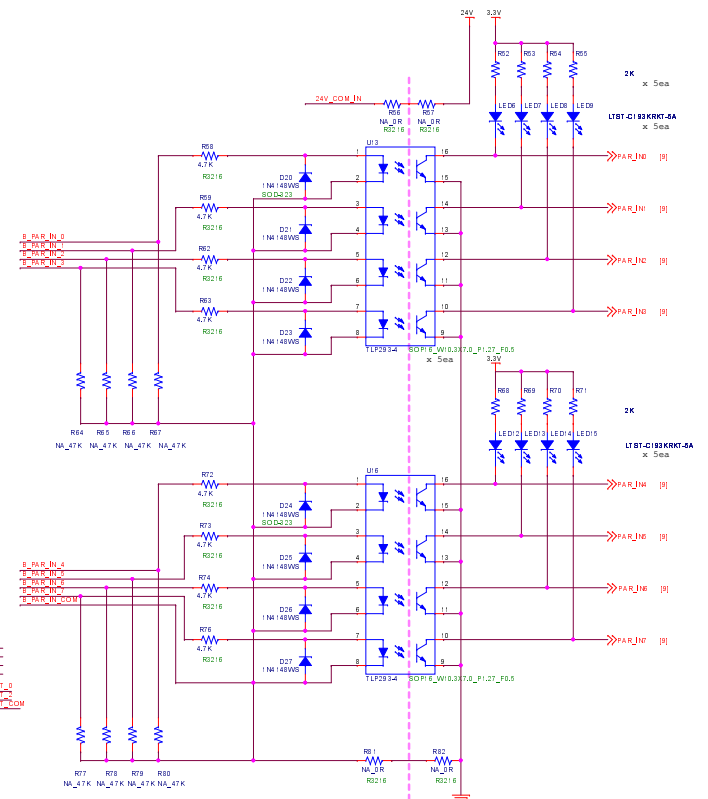
RELAY CONTACT INPUT 경우(OPTION, non-Isolation)  
Ass'y : R56, R57, R81, R82, R64-67, R77-80  
N.A : R75



Parallel IN : 8 Ports  
( 24V Drive input )  
Parallel OUT : 4 Ports



Isolation Barrier

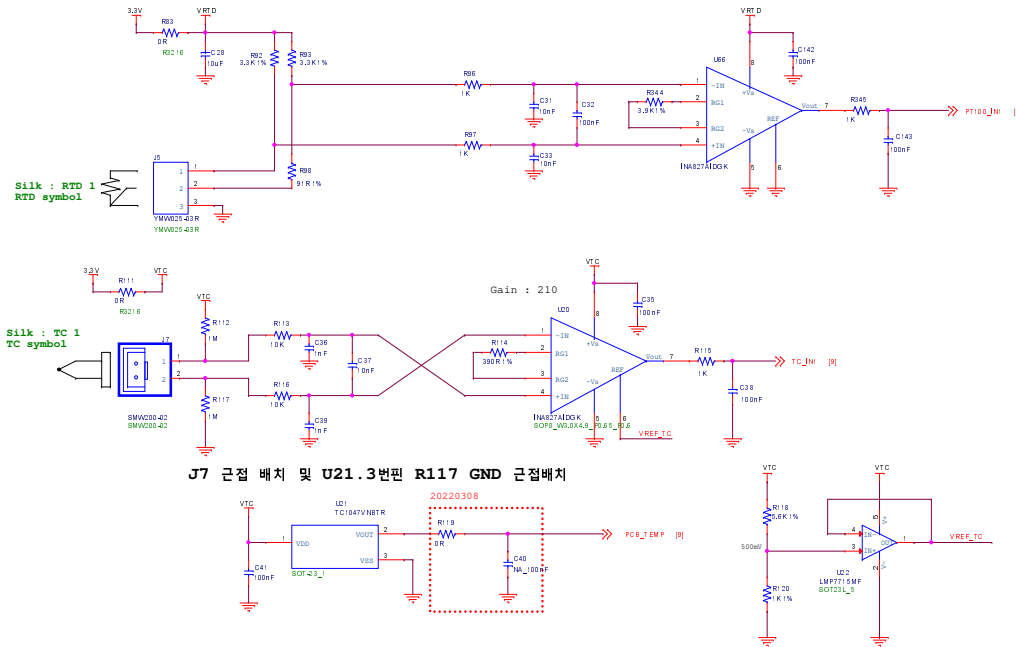


Isolation Barrier

R, L, C, LED 사이즈 미표기 --> 1608 (Metric)

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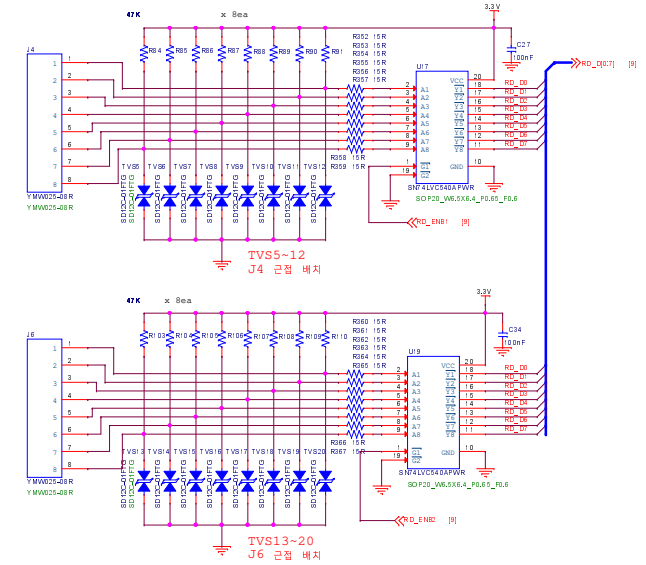
## PT100(RTD) & TC SENSOR - External ADC : PT100 CH#1, TC K-TYPE CH#2



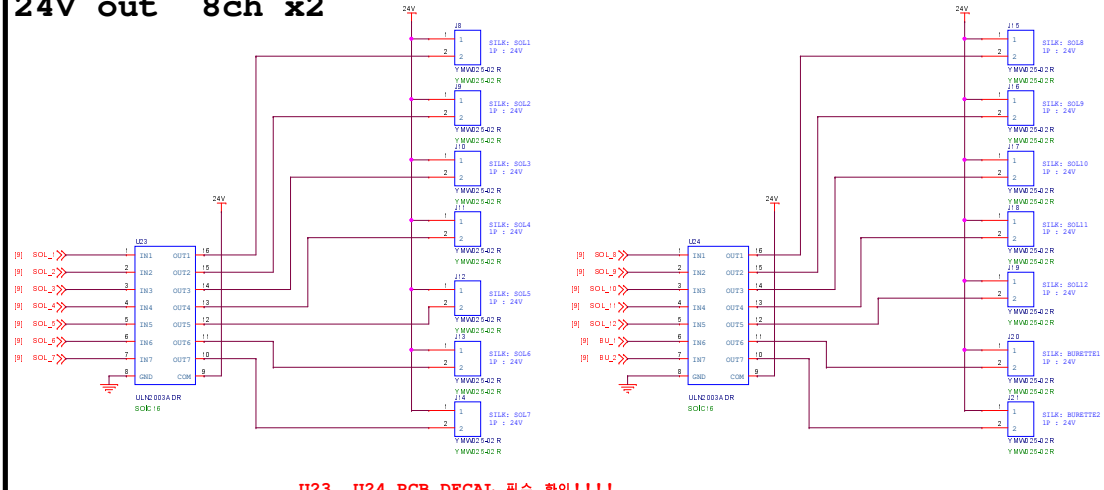
## SENSOR/FAN INPUT

SILK:  
1P : LEAK1  
2P : LEAK2  
3P : LEVEL1  
4P : LEVEL2  
5P : DOOR  
6P : EXHAUST  
7P : INTERLOCK  
8P : ESTOP

SILK:  
1P : FAN1  
2P : FAN2  
3P : FAN3  
4P : FAN4  
5P : RSV1  
6P : RSV2  
7P : RSV3  
8P : RSV4

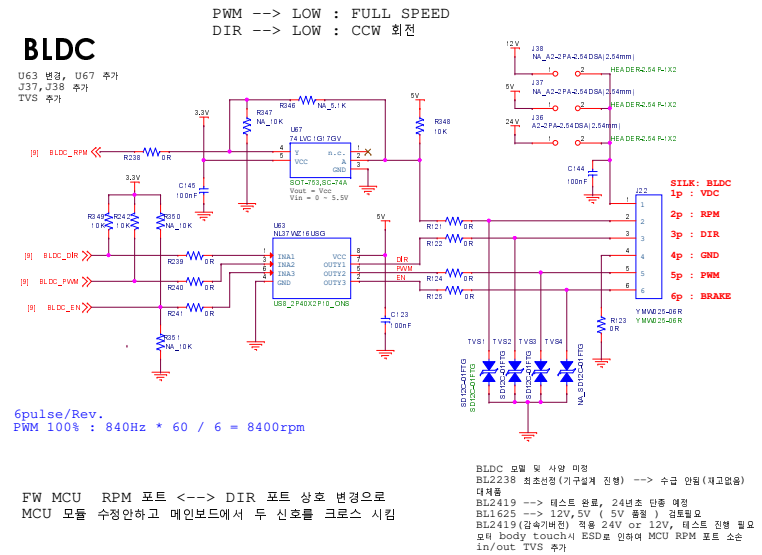


## 24V out 8ch x2



## BLDC

U63 변경, U67 추가  
J37, J38 추가  
TVS 추가

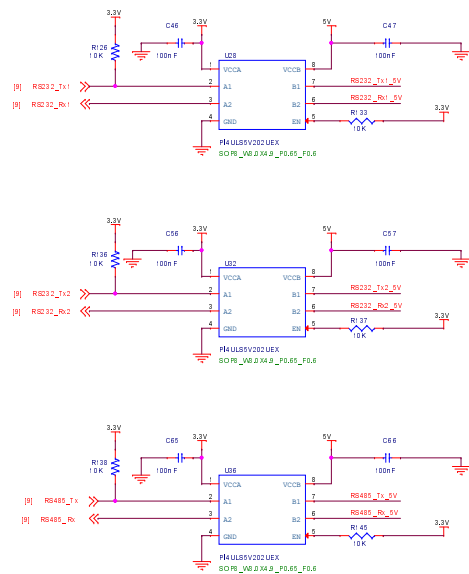


R, L, C 사이즈 미표기 --> 1608 (Metric)

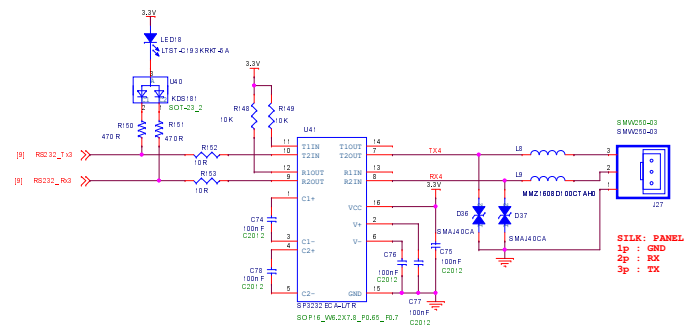
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**RS-232/RS-485**

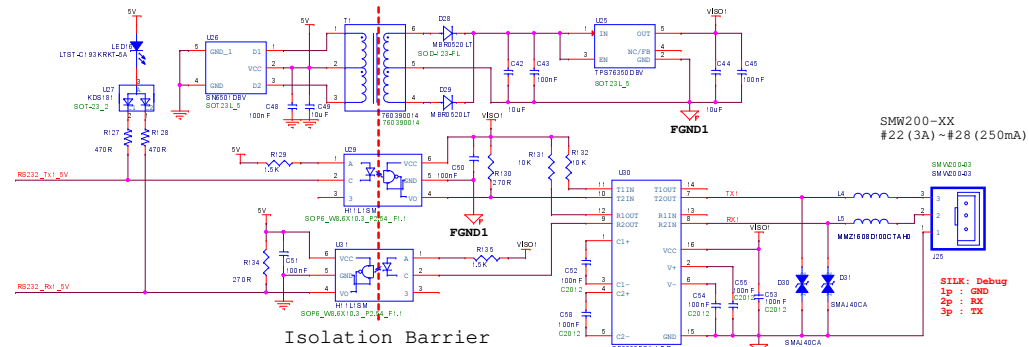
LEVEL SHIFTER( 3.3V <-> 5V )



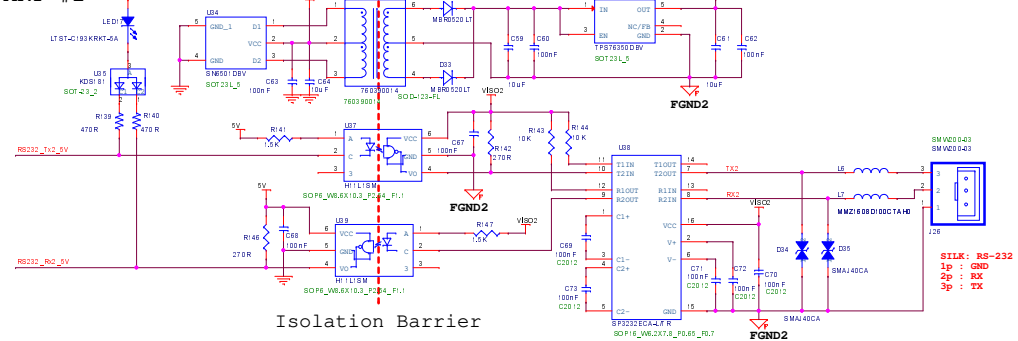
UART #3 RS232 -> panel PC 연결



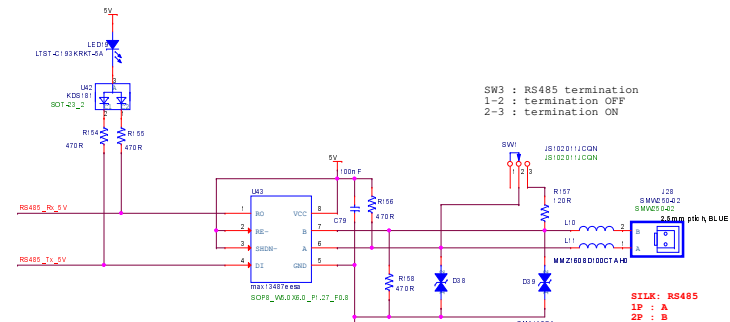
UART #1



UART #2



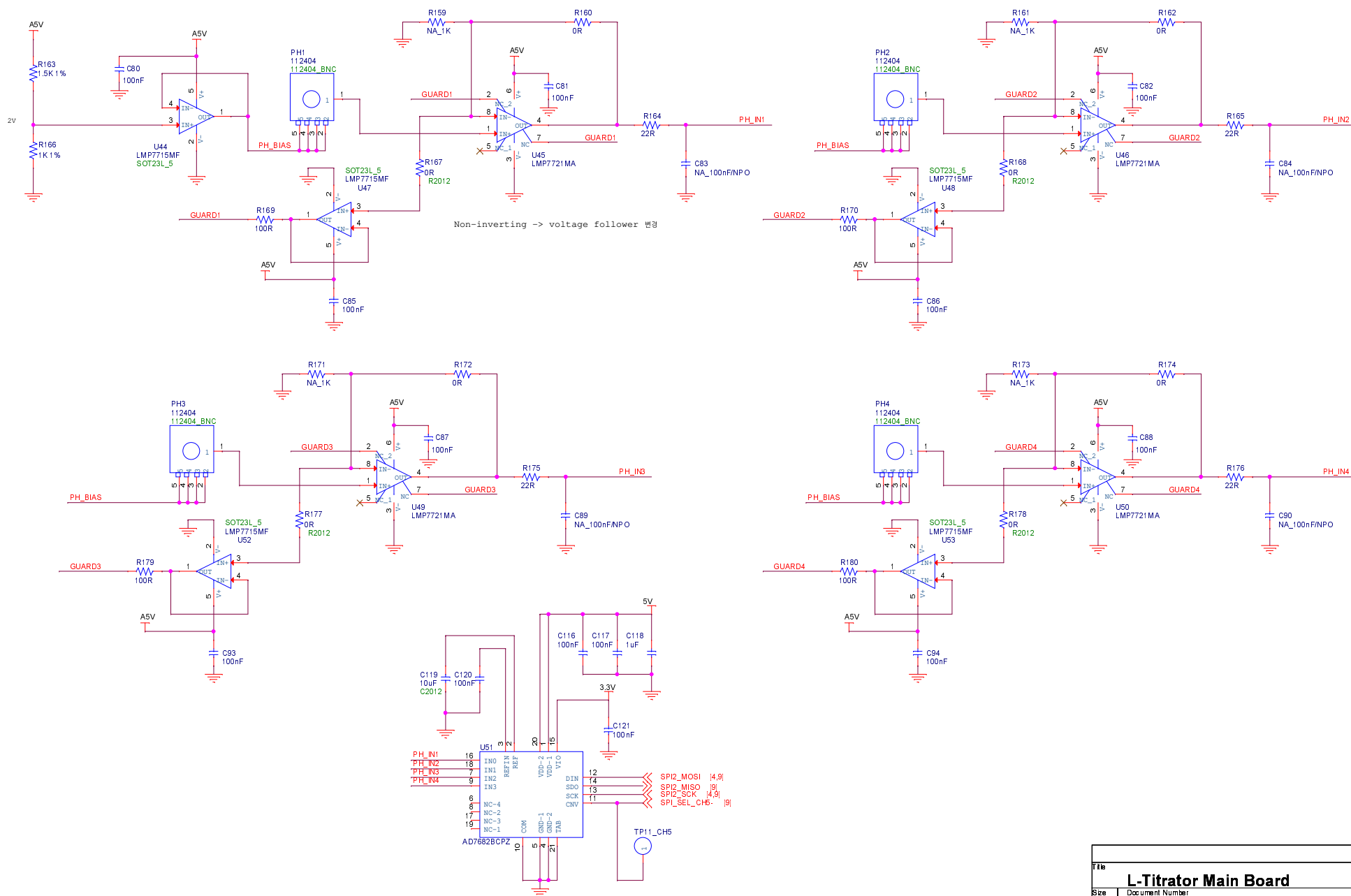
UART #6 RS485 -> 해밀턴 실린지 펌프 사용 (isol X)



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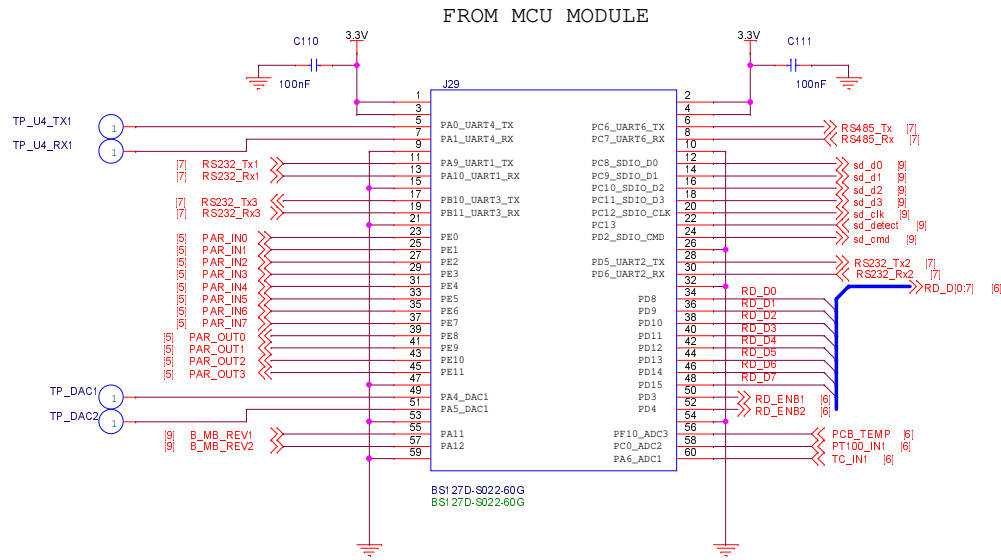
# Analog(pH) Input ch #1~#4

BNC(112404) 사용시 (5핀) : 순수 패턴으로 가드  
 TRIAX 커넥터 사용시 (6핀, R/A) :  
 커넥터 1핀 연결하여 가드 --> 단가 42,000원 사용불가  
 가드 패턴 : LAYOUT GUIDE 문서 참조

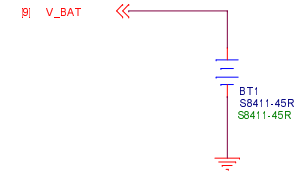
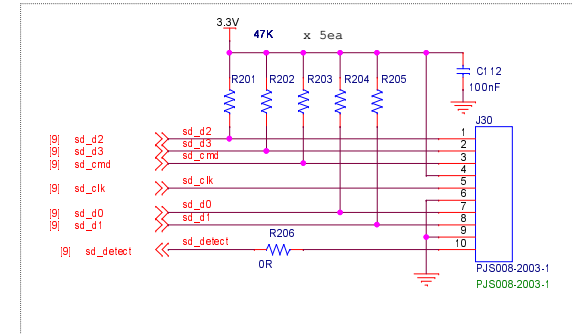


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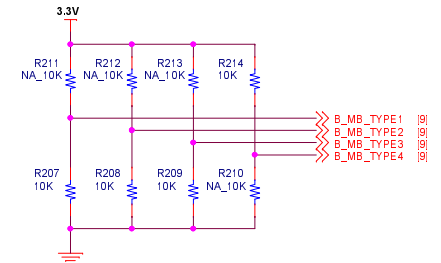


## MICRO SD CARD



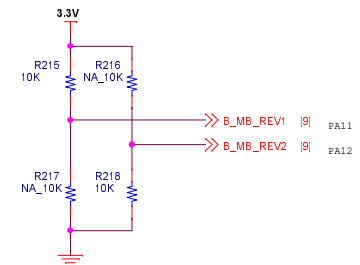
TYPE1~4 (0001~1111)  
MAIN TYPE 15종류 지정

SILK: M/B TYPE



< PCB Issue >		
PA12	PA11	PCB Issue
0	0	Rev 0.1
0	1	Rev 0.2
1	0	Rev 1.0
1	1	Rev 1.1

SILK: M/B Rev.



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A schematic diagram showing a battery connected in series with a switch and a coil. The battery is represented by a long vertical line with a shorter line at the bottom, labeled 'BATTERY'. The switch is represented by a break in the wire with a diagonal line across it, labeled 'SW'. The coil is represented by a series of loops, labeled 'COIL'.

IO BOARD	RELAY_IN1	RELAY_IN0
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RELAY\_IN2

RELAY\_IN3

[illegible]

	J35			
RELAY_OUT0	1	2	2	RELAY_COM_OUT0
RELAY_OUT1	3	4	2	RELAY_COM_OUT1
RELAY_OUT2	5	5	6	RELAY_COM_OUT2
RELAY_OUT3	7	6	8	RELAY_COM_OUT3
RELAY_OUT4	9	7	8	RELAY_COM_OUT4
RELAY_OUT5	11	9	10	RELAY_COM_OUT5
RELAY_OUT6	13	10	12	RELAY_COM_OUT6
RELAY_OUT7	15	11	14	RELAY_COM_OUT7
RELAY_OUT8	17	13	14	RELAY_COM_OUT7
RELAY_OUT9	19	15	16	RELAY_COM_OUT7

HF3 H4 6 DA-2,54 DS  
HF3 H4 6 DA-2,54S DA



















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RELAY_OUT0      1      232      2      RELAY_COM_OUT0
RELAY_OUT1      1      2      2      RELAY_COM_OUT1
RELAY_OUT2      3      5      4      RELAY_COM_OUT2
RELAY_OUT3      3      5      4      RELAY_COM_OUT3
RELAY_OUT4      7      8      7      RELAY_COM_OUT4
RELAY_OUT5      11     10     12     RELAY_COM_OUT5
RELAY_OUT6      13     13     14     RELAY_COM_OUT6
RELAY_OUT7      15     16     16     RELAY_COM_OUT7

HF3FC=FFA2C34DA
HF3FC=FFA2C34DA



















SILK:RELAY
1P/2P: OUT1
3P/4P: OUT2
5P/6P: OUT3
7P/8P: OUT4
9P/10P: OUT5
11P/12P: OUT6
13P/14P: OUT7
15P/16P: OUT8

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MHF  
 MTHOLE D0.0  
 NTH=0.0MM

MCU module 02  
 Dia : 3.5mm , Drill : 3.5mm  
 KEEP OUT Area : 8mm

MHF  
 MTHOLE D0.0  
 NTH=0.0MM

R, L, C, LED 사이즈 미표기 --&gt; 1608 (Metric)

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