

차세대 반도체 디지털 혁신공유대학 사업단

POLARIS

2024 CO-SHOW

MCU 응용 경진대회

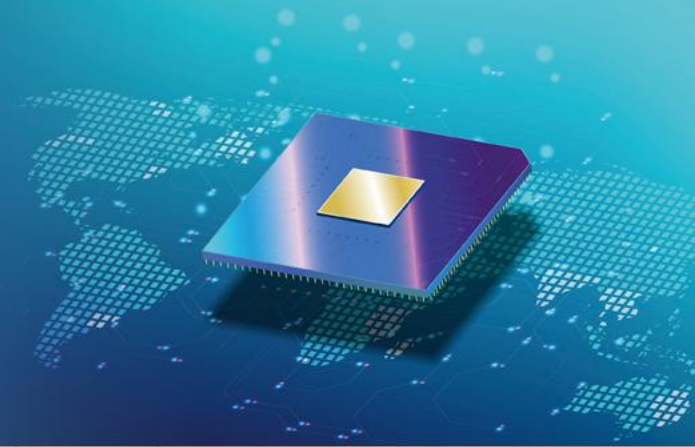
2024. 11. 20 ~ 11. 22

차세대반도체 혁신융합대학 사업단



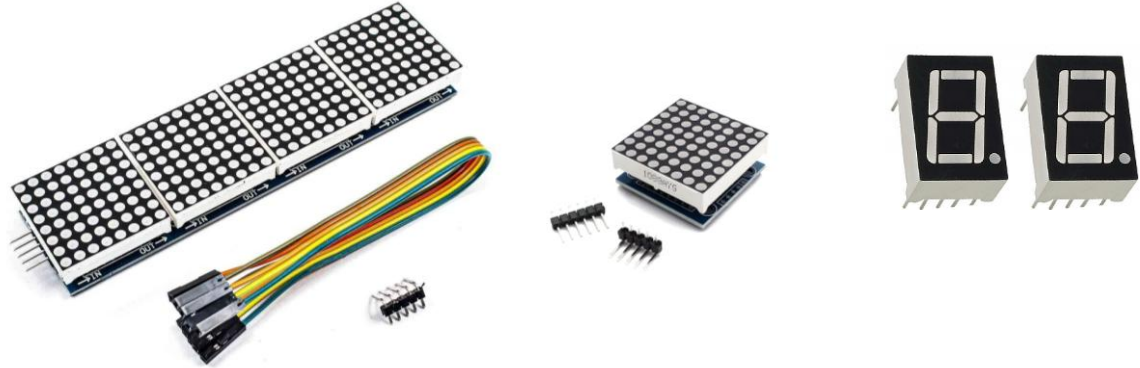


Round 2



Round 2: MIDI Message 전송

건반을 눌렀을 때 및 떴을 때 Dot Matrix LED 와 7-Segment LED에 표시되고, 동시에 MIDI Message를 UART를 통해 PC로 전송.

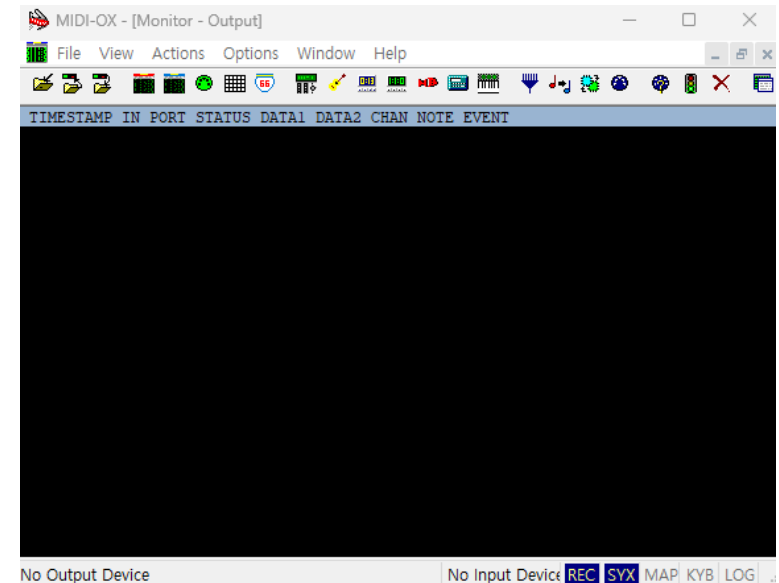


USB-MIDI Bridge



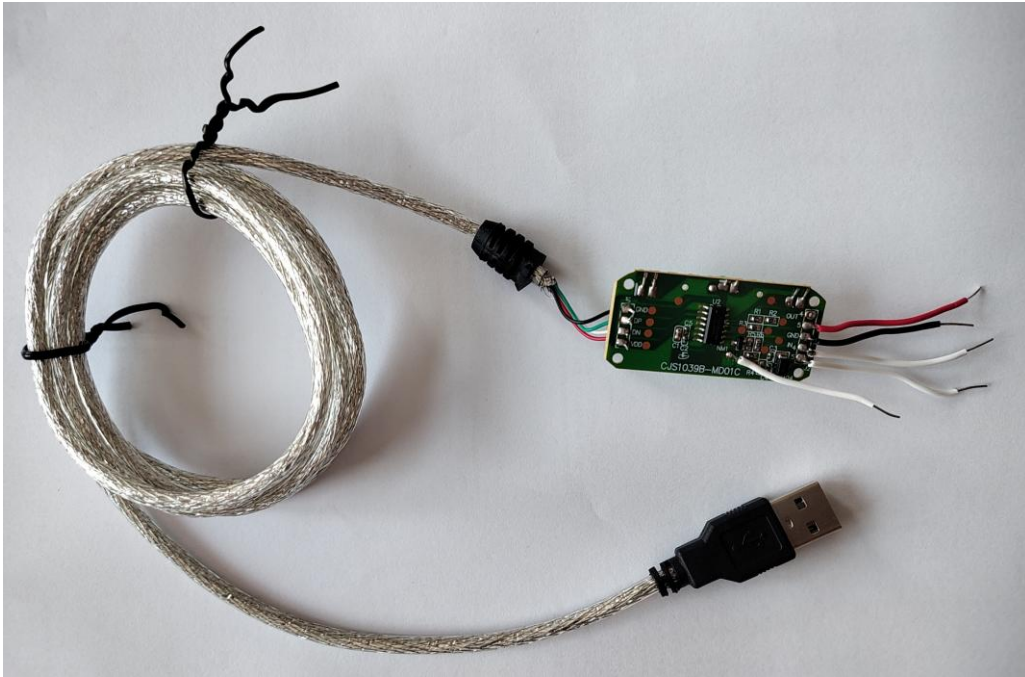
Pianoteq

또는

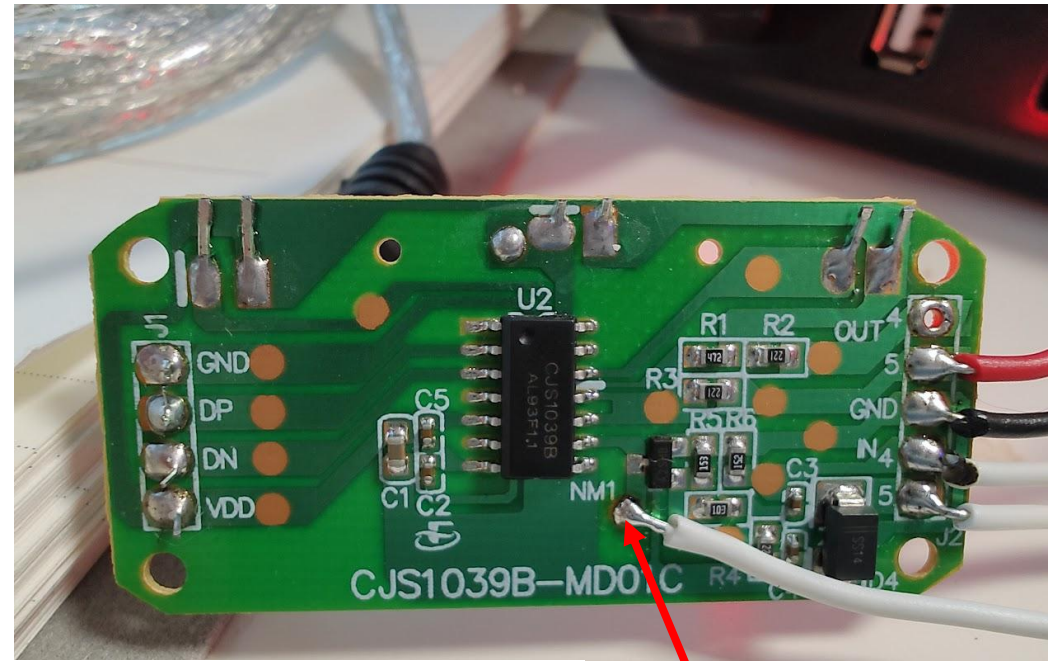


MIDI-OX

USB MIDI Bridge 와 UART 핀 연결



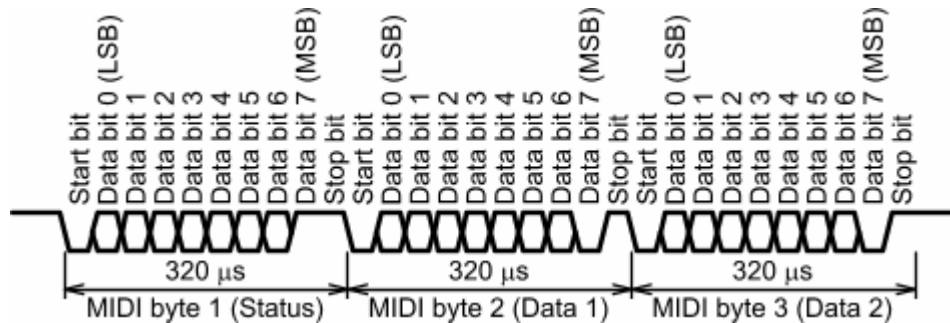
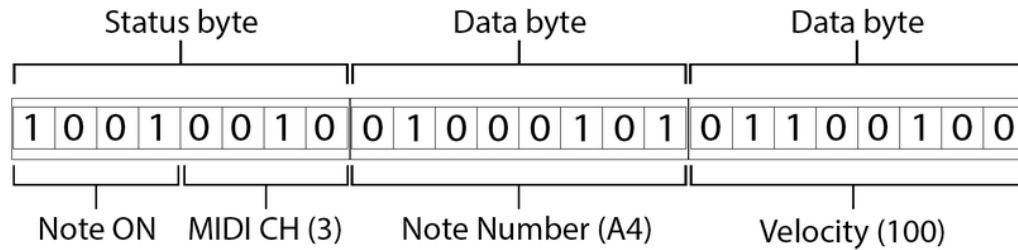
① USB MIDI Bridge의 본체 케이스를 분리.
MIDI 쪽 선은 제거해도 됨.



(PCINT14/RESET) PC6	1	28	PC5
(PCINT16/RXD) PD0	2	27	PC4
(PCINT17/TXD) PD1	3	26	PC3
(PCINT18/INT0) PD2	4	25	PC2
(PCINT19/OC2B/INT1) PD3	5	24	PC1
(PCINT20/XCK/T0) PD4	6	23	PC0
VCC	7	22	GND
GND	8	21	ARE

② 여기에 선을 납땜하여,
MCU의 UART TX 핀에 연결.

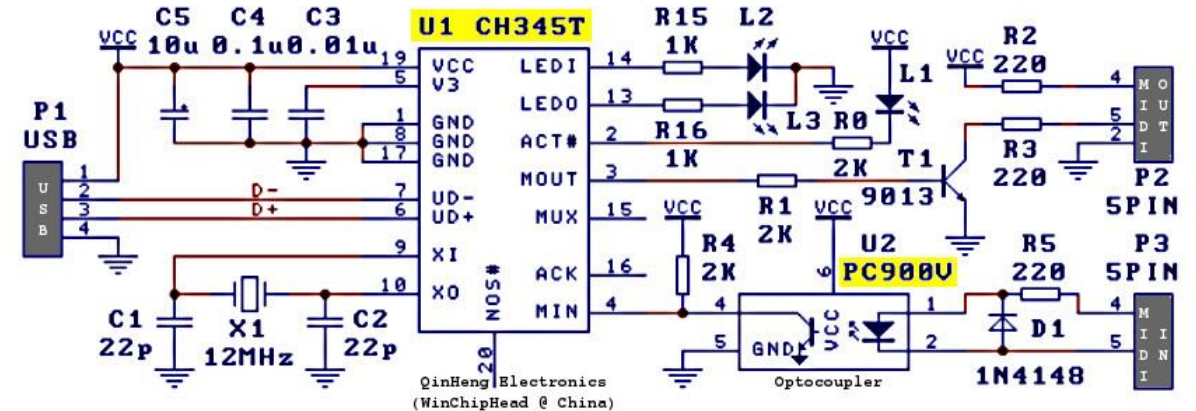
MIDI Communication Protocol



31,250 baud
Asynchronous Serial
Communication



USB to single MIDI channel



UART Debugging 을 위한 도구

(PCINT14/RESET) PC6	1	28	PC5 (A
(PCINT16/RXD) PD0	2	27	PC4 (A
(PCINT17/TXD) PD1	3	26	PC3 (A
(PCINT18/INT0) PD2	4	25	PC2 (A
(PCINT19/OC2B/INT1) PD3	5	24	PC1 (A
(PCINT20/XCK/T0) PD4	6	23	PC0 (A
VCC	7	22	GND
GND	8	21	AREF
(PCINT6/XTAL1/TOSC1) PB6	9	20	AVCC
(PCINT7/XTAL2/TOSC2) PB7	10	19	PB5 (S
(PCINT21/OC0B/T1) PD5	11	18	PB4 (M
(PCINT22/OC0A/AIN0) PD6	12	17	PB3 (M
(PCINT23/AIN1) PD7	13	16	PB2 (S
(PCINT0/CLKO/ICP1) PB0	14	15	PB1 (O

ATmega88PA

다른 핀들은 연결
안 함.

RX 핀

USB-UART Bridge
(CP2101 드라이버
설치 필요)

```
COM5 - PuTTY
$GPGGA,122.000,5232.60748,N,00602.09488,E,1,11,1.3,19.190,M,46.5,M,*,74
$GPGSA,A,3,5,16,21,26,27,29,31,,,,,1.8,1.3,1.3*02
$GPGTSA,A,1,66,81,83,,,,,*,00
$GNGSA,A,1,193,,,,,1.8,1.3,1.3*1C
$GPGSV,4,1,14,05,13,033,30,16,55,297,31,20,14,153,16,21,71,151,15*77
$GPGSV,4,2,14,26,77,232,22,27,22,268,22,29,33,079,18,31,18,203,18*7B
$GPGSV,4,3,14,65,07,356,10,66,21,052,27,67,08,102,11,81,12,057,25*7A
$GPGSV,4,4,14,83,58,257,18,193,05,036,16,,,,,*,4F
$GPHDG,129.1,,,,,001.6,E*39
$GPHDT,130.7,T*30
$GPRMC,29.97,I,1.0149,B,,C,,C,,C,T,,M,,N,,M*35
$GPRMC,122.000,A,5232.60748,N,00602.09488,E,0.00,8,,300618,,A*59
$GPGGA,122.000,5232.60748,N,00602.09488,E,1,11,1.3,19.190,M,46.5,M,*,74
$GPGSA,A,3,5,16,21,26,27,29,31,,,,,1.8,1.3,1.3*02
$GPGTSA,A,1,66,81,83,,,,,*,00
$GNGSA,A,1,193,,,,,1.8,1.3,1.3*1C
$GPGSV,4,1,14,05,13,033,30,16,55,297,31,20,14,153,16,21,71,151,15*77
$GPGSV,4,2,14,26,77,232,22,27,22,268,22,29,33,079,18,31,18,203,18*7B
$GPGSV,4,3,14,65,07,356,10,66,21,052,27,67,08,102,11,81,12,057,25*7A
$GPGSV,4,4,14,83,58,257,18,193,05,036,16,,,,,*,4F
$GPHDG,129.1,,,,,001.6,E*39
$GPHDT,130.7,T*30
$GPRMC,29.969,I,1.0149,B,,C,,C,,C,T,,M,,N,,M*0D
```

Terminal Emulator on PC (PuTTY)

대회 진행 안내 (추가)

Round 별 점수 배분

	배분
Round 1	50%
Round 2	20%
Round 3	30%

Round 별 제출 마감 및 심사

	마감	대면 심사
Round 1	11/21 17:00	요청 심사 가능
Round 2		
Round 3	11/22 10:30	일괄 심사

납땜 지원

납땜 어려움 시 도움 요청 가능