

Braille Printer [Dot] Protocol V1.5

- Control command

all commands start from PC to MBED and always have reply.

each command consists of 3 parts: frame header + data + frame tail, as specified below

	description	data length	remark
frame command	Header byte	1	frame header recognition, 0x02, <STX>
	Command byte	1	CMD
	Length byte	1	LEN
frame data	Data	0~21	description data length 0~21
	Data check byte	1	data check sum
frame command	Tail byte	1	frame tail recognition, 0x03, <ETX>

- Command Byte

command	byte
start print	0x01
emergency abort	0x02
whoami	0x03

- Start Print command

idx	description	data	remark
0	start sequence byte	0x02	<STX>
1	command byte	0x01	CMD
2	length byte	0x18	24
3	dot data1 high byte	==*(uint8_t *)&dot data1	
4	dot data1	==*((uint8_t *)&dot data1)+1	
5	dot data1	==*((uint8_t *)&dot data1)+2	
6	dot data1	==*((uint8_t *)&dot data1)+3	
7	dot data1	==*((uint8_t *)&dot data1)+4	
8	dot data1	==*((uint8_t *)&dot data1)+5	
9	dot data1	==*((uint8_t *)&dot data1)+6	
10	dot data1 low byte	==*((uint8_t *)&dot data1)+7	
11	dot data2 high byte	==*(uint8_t *)&dot data2	
12	dot data2	==*((uint8_t *)&dot data2)+1	
13	dot data2	==*((uint8_t *)&dot data2)+2	
14	dot data2	==*((uint8_t *)&dot data2)+3	
15	dot data2	==*((uint8_t *)&dot data2)+4	
16	dot data2	==*((uint8_t *)&dot data2)+5	
17	dot data2	==*((uint8_t *)&dot data2)+6	
18	dot data2 low byte	==*((uint8_t *)&dot data2)+7	
19	dot data3 high byte	==*(uint8_t *)&dot data3	
20	dot data3	==*((uint8_t *)&dot data3)+1	
21	dot data3	==*((uint8_t *)&dot data3)+2	
22	dot data3	==*((uint8_t *)&dot data3)+3	
23	dot data3	==*((uint8_t *)&dot data3)+4	
24	dot data3	==*((uint8_t *)&dot data3)+5	
25	dot data3	==*((uint8_t *)&dot data3)+6	
26	dot data3 low byte	==*((uint8_t *)&dot data3)+7	
27	data check byte	3~26 byte check sum	check sum
28	end sequence byte	0x03	<ETX>

MBED reply

[case ①]	idx	description	data	remark
	0	communication succeed	0x06	<ACK>

[case ②]	idx	description	data	remark
	0	communication failed	0x15	<NAK>

[case ③]	idx	description	data	remark
	0	line complete	0x19	

if print is over, PC sends following message

idx	description	data	remark
0	page complete	0x04	<EOT>

then, MBED reply is None

- emergency abort command

idx	description	data	remark
0	start sequence byte	0x02	<STX>
1	command byte	0x02	CMD
2	length byte	0x00	0
3	data check byte	0xFF	255
4	end sequence byte	0x03	<ETX>

MBED reply

idx	description	data	remark
0	communication succeed	0x06	<ACK>

- whoami command

idx	description	data	remark
0	start sequence byte	0x02	<STX>
1	command byte	0x03	CMD
2	length byte	0x00	0
3	data check byte	0xFF	255
4	end sequence byte	0x03	<ETX>

MBED reply

idx	description	data	remark
0	communication succeed	0x06	<ACK>

- Check Sum Algorithm

통신 데이터 예

:01 0E 214601360121470136007EFE09D2 40:
:01 0E 2146017EB7C20001FF5F16002148 88:
:01 0E 194E79234623965778239EDA3F01 A7:
:01 0E 3F0156702B5E712B722B73214601 C7:
:02 00:

Start code

Command

Length

Data

Checksum

End code

:01 01 214601360121470136007EFE09D2 40:

여기서 데이터 바이트들만 더하면

$$21+46+01+36+01+21+47+01+36+00+7E+FE+09+D2 = 917 = 0x395$$

여기서 1의 보수를 취하면

$$\sim 917 = 0xFFFFFC6A$$

여기서 1 Byte만 취하면

$$0xFFFFFC6A \& 0xFF = 0x6A \leftarrow \text{Check Sum byte}$$