

<<PC-MCUL32P_BLDC/PWM PLOTOCOL>>

2013. 01. 27

Baud Rate : 9600bps
Data Bits : 8bit
Parity : None
Stop Bits : 1

Block Control Mode와 Block Read Mode를 이용하십시오.

MODE 1 Group Read - 0x8E, Group Control - 0x8d
Block Read - 0x8a, Block Control - 0x89

MODE 2 0x9F(default)

압력범위 - 0.5 mmAq ~ 5 mmAq
0.01mmAq단위 제어가능

1. LCU BLOCK CONTROL

PC->MCUL	예제		PC<- MCUL	(OK)	(Fail)
STX	0x02	1			
MODE1	0x89	1			
MODE2	0x9f	1			
MCUL_Bldc ID	0x81	1			
DPU ID(Default)	0x9f	1(0x9F)			
Start LCU ID	0x81	1	LIU ID = 1		
End LCU ID	0x81	1	LIU ID = 1		
DATA SV	0x0a	1			
하위바이트 DATA mmAq LSV	0x64	1			
상위바이트 DATA mmAq HSV	0x00	1			
Checksum	0xb8	1			
ETX	0x03	1			
		10~14Byte	STX	1	0x02
			MODE1	1	0x89
			MODE2	1	0x9f
			MCUL_Bldc ID	1	0x81
			DPU ID(Default)	1(0x9F)	0x9f
			Start LCU ID	1	0x81
			End LCU ID	1	0x81
			Flag OK Data	1(0xB9)	0xb9
			Checksum	1	0x03
			ETX	1	0x03
				10Byte	

checksum은 Mode1 부터 Data mmAq Hsv 까지
모두 더해서 나온 하위 바이트값

압력모드에서는 SV(RPM)은 의미 없음.
0064(hex) -> 100(Dec)/100 = 1 mmAq
01F4 -> 500(dec)/100 = 5mmAq(ex.)
- 값의 경우(ex.)
10000 - value = X(hex) -> X(dec)/100 = - X mmAq

2. LCU BLOCK READ

PC->MCUL	예제		PC<- MCUL	(OK)	(Fail)
STX	0x02	1			
MODE1	0x8a	1			
MODE2	0x9f	1			
MCUL_Bldc ID	0x81	1			
DPU ID(Default)	0x9f	1(0x9F)			
Start LCU ID	0x81	1			
End LCU ID	0x81	1			
Checksum	0x4b	1			
ETX	0x03	1			
		9Byte	STX	1	0x02
			MODE1	1	0x8a
			MODE2	1	0x9f
			MCUL_Bldc ID	1	0x81
			DPU ID(Default)	1(0x9F)	0x9f
			LCU ID	(1+E- S)	0x81
			DATA PV	(1+E- S)	0a
			DATA AL&ST	(1+E- S)	0x80
			DATA SV	(1+E- S)	0a
			DATA mmAq LSV	(1+E- S)	0x64
			DATA mmAq HSV	(1+E- S)	0x00
			Checksum	1	0x28
			ETX	1	0x03
				(8(1+E- S)+7)Byte = Max 199Byte	

0a(hex) -> 10(Dec)*10 = 100rpm /BLDC 제품
10(Dec) = 10 % /PWM 제품

0064(hex) -> 100(Dec)/100 = 1 mmAq

Data format : STX, Mode1, Mode2, Mcul ID, 0x9F, Lcu1, dataPV, ..., Lcu2, dataPV, ..., Ch_Sum, ETX

PC- MCUL(BLDC)

<<PC- MCUL_BLDC PLOTOCOL>>

Baud Rate : 9600bps
Data Bits : 8bit
Parity : None
Stop Bits : 1

1. LCU BLOCK CONTROL

PC- >MCUL			PC<- MCUL	(OK)	(Fail)
STX	0x02	1	10000 - value = X(hex) ->X(dec)/100 = - X mmAq		
MODE1	0x89	1			
MODE2	0x9f	1			
MCUL_Bldc ID	0x81	1			
DPU ID(Default)	0x9f	1(0x9F)			
Start LCU ID	0x81	1	LIU ID = 1		
End LCU ID	0x81	1	LIU ID = 1		
DATA SV	0x0a	1	rpm = 100		
DATA LSV	0x00	1	not used		
DATA HSV	0x64	1	not used		
Checksum	0xb8	1			
ETX	0x03	1			
			10~14Byte	STX	1
				MODE1	1
				MODE2	1
				MCUL_Bldc ID	1
				DPU ID(Default)	1(0x9F)
				Start LCU ID	1
				End LCU ID	1
				Flag OK Data	1
				Checksum	1
				ETX	1
					10Byte

2. LCU BLOCK READ

PC- >MCUL			PC<- MCUL	(OK)	(Fail)
STX	0X02	1			
MODE1	0X8a	1			
MODE2	0x9f	1			
MCUL_Bldc ID	0x81	1			
DPU ID(Default)	0x9f	1(0x9F)			
Start LCU ID	0x81	1			
End LCU ID	0x81	1			
Checksum	0x4b	1			
ETX	0x03	1			
			9Byte	STX	1
				MODE1	1
				MODE2	1
				MCUL_Bldc ID	1
				DPU ID(Default)	1(0x9F)
				LCU ID	(1+E- S)
				DATA PV	(1+E- S)
				DATA AL&ST	(1+E- S)
				DATA SV	(1+E- S)
				DATA LSV	(1+E- S) not used
				DATA HSV	(1+E- S) not used
				Checksum	1
				ETX	1
					(8(1+E- S)+7)Byte = Max 199Byte

Data forma :STX,Mode1,Mode2,Mcul ID,0x9F,Lcu1,dataPV, ...,Lcu2,dataPV, ...,Ch_Sum,ETX

PC- MCUL(PWM)

<<PC <-> MCUL_PWM PLOTOL<>>

1. LCU GROUP READ

PC->MCUL		PC<- MCUL	(OK)	(Fail)
STX	1	0X02		
MODE1	1	0X8E		
MODE2	1	0X9F		
MCUL_PWM ID	1	0X81	(ID : 1번이라 가정)	
DPU ID(Default	1(0x9F)	0X9F		
Checksum	1	0X4D	(MODE1+MODE2+MCUL_PWM_ID+DPU_ID 한 값의 하위 1BYTE)	
ETX	1	0X03		
	7Byte			
		STX	1	
		MODE1	1	
		MODE2	1	
		MCUL_PWM ID	1	
		DPU ID(Default	1(0x9F)	
		LCU ID	32	
		DATA PV	32	
		DATA AL&ST	32	
		DATA SV	32	
		DATA LSV	32	
		DATA HSV	32	
		Checksum	1	
		ETX	1	
		10000 - value	Max 199Byte	

PC<- MCUL

Data forma :STX,Mode1,Mode2,Mcul ID,0x9F,Lcu1,dataPV, ..., Lcu2,dataPV, ..., Ch_Sum,ETX

2. LCU GROUP CONTROL

PC->MCUL		PC<- MCUL	(OK)	(Fail)
STX	1	0X02		
MODE1	1	0X8D		
MODE2	1	0X9C		
MCUL_PWM ID	1	0X81		
DPU ID(Default	1(0x9F)	0X9F		
DATA SV	1	0X0A		
DATA LSV	1	0X00		
DATA HSV	1	0X64		
Checksum	1	0XB7		
ETX	1	0X03		
	Max 10Byte			
		STX	1	
		MODE1	1	
		MODE2	1	
		MCUL_PWM ID	1	
		DPU ID(Default	1(0x9F)	
		Flag OK Data	1	
		Checksum	1	
		ETX	1	
			8Byte	

3. LCU BLOCK CONTROL

PC->MCUL		ex)	PC<- MCUL	(OK)	(Fail)
STX	1	0x02			
MODE1	1	0x89			
MODE2	1	0x9f			
MCUL_PWM ID	1	0x81			
DPU ID(Default	1(0x9F)	0x9f			
Start LCU ID	1	0x81			
End LCU ID	1	0x81			
DATA SV	1	0x0a	0a -> 10%		
DATA LSV	1	0x00	00 -> 0%		
DATA HSV	1	0x64	64 -> 100%		
Checksum	1	0xB8	Checksum =(Mode1+Mode2+ ... + DATA HSV)		
ETX	1	0x03			
10~ 14Byte					
			STX	1	0x02
			MODE1	1	0x89
			MODE2	1	0x9f
			MCUL_PWM ID	1	0x81
			DPU ID(Default	1(0x9F)	0x9f
			Start LCU ID	1	0x81
			End LCU ID	1	0x81
			Flag OK Data	1	0xb9
			Checksum	1	0x03
			ETX	1	0x03
			10Byte		

4. LCU BLOCK READ

PC->MCUL		ex)	PC<- MCUL	(OK)	(Fail)
STX	1	0x02			
MODE1	1	0x8a			
MODE2	1	0x9f			
MCUL_PWM ID	1	0x81			
DPU ID(Default	1(0x9F)	0x9f			
Start LCU ID	1	0x81			
End LCU ID	1	0x81			
Checksum	1	0x4b			
ETX	1	0x03			
9Byte					
			STX	1	
			MODE1	1	
			MODE2	1	
			MCUL_PWM ID	1	
			DPU ID(Default	1(0x9F)	
			Start LCU ID	1	
			End LCU ID	1	
			LCU ID	(1+E- S)	
			DATA PV	(1+E- S)	
			DATA AL&ST	(1+E- S)	
			DATA SV	(1+E- S)	
			DATA LSV	(1+E- S)	
			DATA HSV	(1+E- S)	
			Checksum	1	
			ETX	1	
			(8(1+E- S)+7)Byte = Max 199Byte		

Data format :STX,Mode1,Mode2,Mcui ID,0x9F,Lcu1,dataPV, ...,Lcu2,dataPV, ...,Ch_Sum,ETX

PC- MCUL Command(bldc&pwm)

Command	Description									Recommand (set=1, *:don't care)
MODE1	8	7	6	5	4	3	2	1	bit	
	set	0	0	0	set	set	*	*		GROUP
	set	0	0	0	set	0	*	*		BLOCK
	set	0	0	0	0	set	*	*		
	set	0	0	0	*	*	set	0		READ
	set	0	0	0	*	*	0	set		CONTROL
	set	0	0	set	*	*	0	set		Alarm Hold Reset
	set	set	0	0	0	0	set	0		Flag Check

MODE2	8	7	6	5	4	3	2	1	bit	9F(default)
	set	*	*	*	*	*	*	set		Process Value
	set	*	*	*	*	*	set	*		Alarm Data
	set	*	*	*	*	set	*	*		Setting Value
	set	*	*	*	set	*	*	*		mmAq Low Setting Value
	set	*	*	set	*	*	*	*		mmAq High Setting Value

MCUL_Bldc ID	8	7	6	5	4	3	2	1	bit	
	set	0	0	16	8	4	2	1		MCUL_Bldc ID Value < 33

DPU ID	8	7	6	5	4	3	2	1	bit	
	set	0	0	set	set	set	set	set		DPU ID (Default Value=0x9F)
LCU ID	8	7	6	5	4	3	2	1	bit	
	set	*	32	->X	8	4	2	1		LCU ID Value < 33
Flag OK Data	8	7	6	5	4	3	2	1	bit	
	set	0	set	set	set	0	0	set		Flag OK Data (0xB9)
DATA PV	8	7	6	5	4	3	2	1	bit	Process Value (ten's digit)
	128	64	32	16	8	4	2	1		
										LIU214 및 시스템의 LIU제품의 알람코드는 아래와 같음
DATA AL&ST	8	7	6	5	4	3	2	1	bit	Alarm Value
	set	*	*	*	*	*	*	*		Romote Control Mode(추가) --> 0x80
	set	*	*	*	*	*	*	set		Local Control Mode --> 0x81
	set	*	*	*	*	*	set	*		Thermal Relay Alarm (Not used)
	set	*	*	*	*	set	*	*		Open the door (Not used)
	set	*	*	*	set	*	*	*		Setting Alarm(SV>Max or SV<Min) (Not used)
	set	*	*	set	*	*	*	*		RPM Alarm(PV>HSV or PV<LSV) (Not used)
	set	*	set	*	*	*	*	*		PWM(n_c) & MCUL(AS) --> 0xa0
	set	set	*	*	*	*	*	*		LIU(Emp&ErrA)&MCUL(ME)/PWM(th)&MCUL(TR) -> 0xc0
	0	0	0	0	0	0	0	0		No connection LCU -> 0x00
										BLDC의 경우, 과전류&홀센서에러 : 0xa0
										BLDC의 경우, 전원에러&IPM과열&모터과열&RPM에러 : 0xc0
DATA SV	8	7	6	5	4	3	2	1	bit	Setting Value (ten's digit)
	128	64	32	16	8	4	2	1		Delete the first value ex)1,200->120
DATA LSV	8	7	6	5	4	3	2	1	bit	Low Setting Value (ten's digit)
(LIU_MODE)	128	64	32	16	8	4	2	1		Delete the first value ex) 908->90
DATA HSV	8	7	6	5	4	3	2	1	bit	High Setting Value (ten's digit)
(LIU_MODE)	128	64	32	16	8	4	2	1		Delete the first value ex)1,306->130

Checksum Except as STX, ETX Byte, Compliment on the Low Byte of all data Byte Sum