

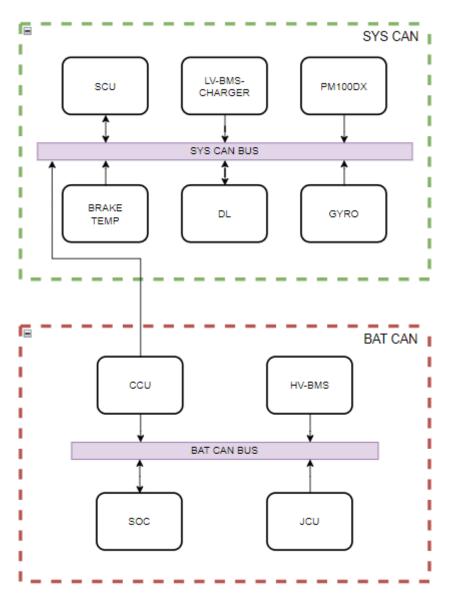
KUST 2024 E-FORMULA

CAN Protocol

1. System Diagram	1
HW System	2
2. BAT CAN	3
CAN Communication Parameters	
CAN Data information	5
CAN Data Map	6
3. SYS CAN	7
CAN Communication Parameters	8
CAN Data information	9
CAN Data Map	10

1. System Diagram

- HW System



SCU: SYS CAN BUS LV-BMS-CHARGER

PM100DX

BRAKE TEMP

GYRO

DL

CCU: BAT CAN BUS

HV-BMS

SOC

JCU

2. BAT CAN

- CAN Communication Parameters

CAN TYPE	CAN 2.0A(standard)
Bit Rate	500kbit/sec
ID	11bit
DLC	8(byte)

- CAN Data information

Name	CAN	CAN	Data	Scale	Unit	Min	Max	Default	Description
	ID	BYTE	type						
Data1		0,1	U16	1	N/m				EX
Data2	0x00	2,3	U16	1	V				EX
Data3		4,5	U16	1	А				EX
Data4		6,7	S16	1	t				EX
Α		0							
В		1							
С		2							
D	0X21	3							
E		4							
F		5							
G		6							
Н		7							

... 아래에 셀추가로

- CAN Data map

Byte CAN-ID	0	1	2	3	4	5	6	7
EX)0x00	DAT	ΓA 1	Di	ATA2	DAT	A3 DA		TA4
				HV BMS				
0x10	SEC	G_1	SEG_1		SEG_1 TEMP	SEG_1	SEG_1	RESERVED
	CELL	CELL MAX		CELL MIN		TEMP MIN	BMS STAT	
0x11	SEC	G_2	SE	EG_2	SEG_2 TEMP	SEG_2	SEG_2	RESERVED
	CELL	MAX	CEL	L MIN	MAX	TEMP MIN	BMS STAT	

0x12	SEC	G_3	SI	EG_3	SEG_3 TEMP	SEG_3	SEG_3	RESERVED
	CELL	MAX	CEL	L MIN	MAX	TEMP MIN	BMS STAT	
0x13	SEC	G_4	SI	EG_4	SEG_4 TEMP	SEG_4	SEG_4	RESERVED
	CELL	MAX	CEL	L MIN	MAX	TEMP MIN	BMS STAT	
0x14	SEC	G_5	SI	EG_5	SEG_5 TEMP	SEG_5	SEG_5	RESERVED
	CELL	MAX	CEL	L MIN	MAX	TEMP MIN	BMS STAT	
0x15	HV PACK		RESERVED		RESERVED		RESERVED	
0x16	RESE	RVED	RES	ERVED	RESERVED		RESERVED	
0x17	RESE	RVED	RES	ERVED	RESER	VED	RESE	RVED
0x18	RESE	RVED	RESERVED		RESER	VED	RESE	RVED
0x19	RESE	RVED	RESERVED		RESERVED		RESERVED	
				JCU				
0x20	TSAL	AIR1_SIG	AIR2_SIG	AIR_REL_PWR	AIR_REL_PWR	SDC	0	PRE_REL
0X21	OX21 HV_V PRE_REL_MC_			PRE_REL_MC_V	′		DIS_REL_MC_V	'
				soc				
0x30~39	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

^{...} 아래에 셀추가로

3. SYS CAN

- CAN Communication Parameters

CAN TYPE	CAN 2.0A(standard)
Bit Rate	500kbit/sec
ID	11bit
DLC	8(byte)

- CAN Data information

Name	CAN	CAN	Data	Scale	Unit	Min	Max	Default	Description
	ID	BYTE	type						
Data1		0,1	U16	1	N/m				EX
Data2	0x00	2,3	U16	1	V				EX
Data3		4,5	U16	1	Α				EX
Data4		6,7	S16	1	t				EX
Α		0							
В		1							
С		2							
D	0X00	3							
E		4							
F		5							
G		6							
Н		7							

... 아래에 셀추가로

- CAN Data map

Byte CAN-ID	0	0 1 2		3	4	5	6	7				
	BAT											
				HV BMS								
0x10	SEC	G_1	S	EG_1	SEG_1 TEMP	SEG_1 TEMP	SEG_1	RESERVED				
	CELL	MAX	CE	LL MIN	MAX	MIN	BMS STAT					

0x11	SE	G_2	S	EG_2	SEG_2 TEMP	SEG_2 TEMP	SEG_2	RESERVED		
	CELL	MAX	CEI	LL MIN	MAX	MIN	BMS STAT			
0x12	SE	G_3	S	EG_3	SEG_3 TEMP	SEG_3 TEMP	SEG_3	RESERVED		
	CELL	MAX	CEI	LL MIN	MAX	MIN	BMS STAT			
0x13	SE	G_4	S	EG_4	SEG_4 TEMP	SEG_4 TEMP	SEG_4	RESERVED		
	CELL	MAX	CELL MIN		MAX	MIN	BMS STAT			
0x14	SE	G_5	SEG_5		SEG_5 TEMP	SEG_5 TEMP	SEG_5	RESERVED		
	CELL	MAX	CEI	L MIN	MAX MIN		BMS STAT			
0x15	HV I	PACK	RES	SERVED	RESER	RVED	RES	ERVED		
0x16	RESE	RVED	RES	SERVED	RESER	RVED	RES	ERVED		
0x17	RESE	RVED	RES	SERVED	RESER	RVED	RES	ERVED		
0x18	RESE	RVED	RES	SERVED	RESER	RVED	RES	ERVED		
0x19	RESE	RVED	RES	SERVED	RESER	RVED	RES	ERVED		
				JCU						
0x20	TSAL	AIR1_SIG	AIR2_SIG	AIR_REL_PWR	AIR_REL_PWR	SDC	_	PRE_REL		
0X21		/_V_V	.=_3.3	PRE_REL_MC_V			DIS_REL_MC_			
U/12.1		· <u>-</u> ·		SOC			5.0			
0x30~39	RESERVE	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVE	RESERVED		
0.00~33	D	KLJLKVLD	KLSLKVLD	RESERVED	RESERVED	KLSLKVLD	D	RESERVED		
	D			SYS			D			
0.50	M. C.I	D. / - It	NA' - C	LV BMS	De d. M	- Ir	Clark	Maliana		
0x50		lVoltage	MinCellVoltage		Pack_Voltage			_Voltage		
0x51	Pack_0	Current	CELL_Temp		FET_Temp		RESERVE	RESERVED		
			0 (. 0	6.6.6	SafetyStatusC PFStatusA		D	DEG. 1 C		
0x52		tiveCells	SafetyStatuA	SafetyStatusB	•		PFStatusB	PFStatusC		
0x53	Alarmi	RawBits	FET_Status	RESERVED		Accumulated_0	ted_Charge_Time			
				LV CHARGER		1				
0x54	STAT_1	STAT_2	STAT_3	Fault_STAT	RESERVED	RESERVED	RESERVE	RESERVED		
							_			
ΛEE							D			
0x55	IAC_	_ADC	IBA	T_ADC	VAC_A	ADC		3_ADC		
0x55 0x56~0x59	IAC_	_ADC	IBA	RESE	VAC	ADC		3_ADC		
	IAC_	ADC		RESE SCU	RVED		VFE	_		
	FR_L	inear	FL	RESE SCU Linear	RVED RR_Li	near	VFE	Linear		
0x56~0x59	FR_L		FL	RESE SCU	RVED	near	VFE	_		
0x56~0x59 0x60	FR_L FR_Whe	inear	FL_Wł	RESE SCU Linear	RVED RR_Li	near	VFE	Linear		
0x56~0x59 0x60 0x61	FR_L FR_Whe	inear eelSpeed	FL_Wł	RESE SCU Linear neelSpeed	RVED RR_Li	near	VFE	Linear		
0x56~0x59 0x60 0x61	FR_L FR_Whe	inear eelSpeed	FL_Wł	RESE SCU Linear neelSpeed _Pressure	RVED RR_Li	near	VFE	Linear		
0x56~0x59 0x60 0x61 0x62	FR_L FR_Whe	inear eelSpeed	FL_Wł	RESE SCU Linear neelSpeed _Pressure	RVED RR_Li	near	VFE	Linear		
0x56~0x59 0x60 0x61 0x62	FR_L FR_Whe Steer_	inear eelSpeed	FL_Wh Brake	RESE SCU Linear neelSpeed Pressure DL	RVED RR_Li	near elSpeed -	RL_ RL_Wh	Linear		
0x56~0x59 0x60 0x61 0x62 0x70	FR_L FR_Whe Steer_ Module	inear celSpeed _Linear	FL_Wh Brake	RESE SCU Linear neelSpeed _Pressure DL PM100DX	RVED RR_Li RR_Whee	near elSpeed - C Temp	RL_ RL_Wh	Linear eelSpeed -		
0x56~0x59 0x60 0x61 0x62 0x70	FR_L FR_Whe Steer_ Module Control be	inear celSpeed Linear	FL_ FL_Wh Brake Modu	RESE SCU Linear neelSpeed _Pressure DL PM100DX le B Temp	RVED RR_Li RR_Whee	near elSpeed - C Temp	RL_ RL_Wh	Linear eelSpeed - r Board Temp		
0x56~0x59 0x60 0x61 0x62 0x70 0x0A0 0x0A1	FR_L FR_Whe Steer_ Module Control be	inear eelSpeed Linear A Temp oard Temp	FL_ FL_Wh Brake Modu	RESE SCU Linear neelSpeed _Pressure DL PM100DX le B Temp #1 Temp	RR_Li RR_Whee - Module RTD#2	near elSpeed - C Temp	RL_ RL_Wh	Linear eelSpeed - r Board Temp		
0x56~0x59 0x60 0x61 0x62 0x70 0x0A0 0x0A1	FR_L FR_Whe Steer_ Module Control be	inear eelSpeed Linear A Temp oard Temp	FL_ FL_Wh Brake Modu	RESE SCU Linear neelSpeed _Pressure DL PM100DX le B Temp #1 Temp	RR_Li RR_Whee - Module RTD#2	near elSpeed - C Temp	RL_ RL_Wh	Linear eelSpeed - r Board Temp		
0x56~0x59 0x60 0x61 0x62 0x70 0x0A0 0x0A1 0x0A2	FR_L FR_Whe Steer_ Module Control be	inear eelSpeed Linear A Temp oard Temp	FL_Wh Brake Modu RTDi	RESE SCU Linear neelSpeed Pressure DL PM100DX le B Temp #1 Temp pot Temp	RR_Li RR_Whee - Module RTD#2 Motor	near elSpeed - C Temp Temp	RL_ RL_Wh - Gate Driver	Linear eelSpeed - r Board Temp 3 Temp Shudder		
0x56~0x59 0x60 0x61 0x62 0x70 0x0A0 0x0A1 0x0A2	FR_L FR_Whe Steer_ Module Control be Coolar Forward switch	inear celSpeed Linear A Temp oard Temp nt Temp	FL_Wh Brake Modu RTD: Hot S Brake switch	RESE SCU Linear neelSpeed _Pressure DL PM100DX le B Temp #1 Temp pot Temp REGEN Disable	RR_Li RR_Whee - Module RTD#2 Motor	near elSpeed - C Temp Temp Temp Start switch	RL_ RL_Wh - Gate Driver RTD# Torque Valet- Mode	Linear eelSpeed - r Board Temp 3 Temp Shudder		
0x56~0x59 0x60 0x61 0x62 0x70 0x0A0 0x0A1 0x0A2	FR_L FR_Whee Steer_ Module Control be Coolar Forward switch Motor	inear celSpeed Linear A Temp oard Temp t Temp Reverse switch	FL_FL_Wh Brake Modu RTD= Hot S Brake switch Motor	RESE SCU Linear neelSpeed Pressure DL PM100DX le B Temp #1 Temp pot Temp REGEN Disable Switch	RVED RR_Li RR_Whee - Module RTD#2 Motor Ignition switch	near elSpeed - C Temp Temp Temp Start switch ut Frequency	RL_ RL_Wh - Gate Driver RTD# Torque Valet Mode Delta Rese	Linear eelSpeed - r Board Temp 3 Temp Shudder Status of Digital Input		
0x56~0x59 0x60 0x61 0x62 0x70 0x0A0 0x0A1 0x0A2	FR_L FR_Whe Steer_ Module Control by Coolar Forward switch Motor Phase A	A Tempoart Temp Reverse switch A Current	FL_FL_Wh Brake Modu RTDa Hot S Brake switch Motor Phase	RESE SCU Linear neelSpeed Pressure DL PM100DX le B Temp #1 Temp pot Temp REGEN Disable Switch r Speed 1 B current	RVED RR_Li RR_Whee - Module RTD#2 Motor Ignition switch Electrical Outp Phase C	near elSpeed - C Temp Temp Temp Start switch out Frequency current	RL_ RL_Wh - Gate Driver RTD# Torque Valet Mode Delta Rese	Linear eelSpeed - r Board Temp 3 Temp Shudder Status of Digital Input blver Filtered Voltage 1		
0x56~0x59 0x60 0x61 0x62 0x70 0x0A0 0x0A1 0x0A2 0x0A4 0x0A5 0x0A6	FR_L FR_Whee Steer_ Module Control be Coolar Forward switch Motor Phase A DC Bus V	inear eelSpeed Linear A Temp oard Temp nt Temp Reverse switch	Modu RTD: Hot S Brake switch Motor Phase Outpu	RESE SCU Linear neelSpeed _Pressure DL PM100DX le B Temp #1 Temp pot Temp REGEN Disable Switch r Speed 1	RVED RR_Li RR_Whee - Module RTD#2 Motor Ignition switch	near elSpeed - C Temp Temp Temp Start switch ut Frequency current Voltage	RL_RL_Wh - Gate Driver RTD# Torque Valet-Mode Delta Resc DC Bus VBC_Vc	Linear eelSpeed - r Board Temp 3 Temp Shudder Status of Digital Input		

0x0A9	1.5V Refere	ence voltage	2.5V Refe	rence voltage	5V Ref	e rence voltage	12V Refe	rence voltage	
0x0AA	VSM State	PWM Frequency	Inverter State	Relay State	1. Inverting Run model (1) 2. Inverting Active Dischart State (Bits-	ter 1. Inverter c(Bit Command Mode(5- ter Bit0) 2. Rolling- ge Counter-	1 Inverter- Enable- State(Bit 0) 2. Start- Mode- Active(Bit 6) 3 Inverter- Enable- Lockout(Bit7)	1. Direction— Command(Bi t-0) 2. BMS— Active(Bit-1) 3. BMS— Limiting— Torque(Bit-2) 4. Limit Max— Speed(Bit-3) 5. Limit Hot— Spot(Bit-4) 6. Low Speed Limiting(Bit—5) 7. Coolant— Temperature— Limiting(Bit—6)	
0x0AB	POST I	Fault Lo	POS	Γ Fault Hi	Run Fault Lo		Run	Run Fault Hi	
0x0AC	Commar	nd Torque	Torque	e Feedback	Power o		n Timer	n Timer	
0x0AD	Modulat	ion Index	Flux Weal	kening Output	ld_	_command	Iq_command		
0x0B0	Torque (Command	Torque	e Feedback	Mo	tor Speed 2	DC Bu	s Voltage 3	
0x0C0	Torque (Command	Speed	Command	Directio n Comma nd	Inverter Enable(5.0) Inverter Discharge(5.1) Speed Mode Enable(5.2)	Comman	d Torque Limit	
0x0C1 0x0C2		er Address	R/W- Command Write-	Reserved Reserved	Data Data			eserved	
			Success						
0 "		15		Gyro		V D .		7.5.	
0xff	-	ID	X	_Data	Y_Data		Z_Data		

- 수정사항 -

<mark>빨간글씨</mark>는 로깅 필요x

2024-07-11 01:24 파란글씨는 little endian