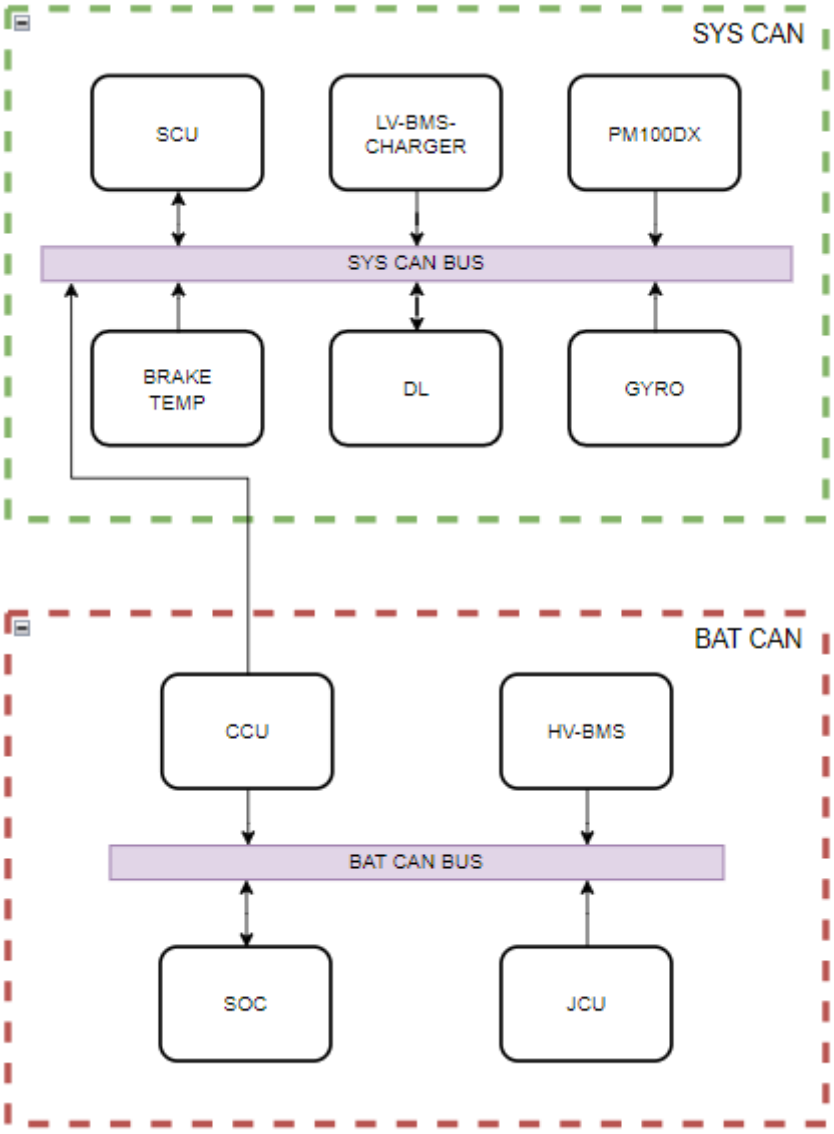
KUST 2024 E-FORMULA

CAN Protocol

목차

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 ID	CAN BYTE	Data type	Scale	Unit	Min	Max	Default	Description
Data1	0x00	0,1	U16	1	N/m				EX
Data2		2,3	U16	1	V				EX
Data3		4,5	U16	1	A				EX
Data4		6,7	S16	1	t				EX
A	0X21	0							
B		1							
C		2							
D		3							
E		4							
F		5							
G		6							
H		7							

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- CAN Data map

Byte / CAN-ID	0	1	2	3	4	5	6	7
EX)0x00	DATA 1		DATA2		DATA3		DATA4	
HV BMS								
0x10	SEG_1 CELL MAX		SEG_1 CELL MIN		SEG_1 TEMP MAX	SEG_1 TEMP MIN	SEG_1 BMS STAT	RESERVED
0x11	SEG_2 CELL MAX		SEG_2 CELL MIN		SEG_2 TEMP MAX	SEG_2 TEMP MIN	SEG_2 BMS STAT	RESERVED

0x12	SEG_3 CELL MAX		SEG_3 CELL MIN		SEG_3 TEMP MAX	SEG_3 TEMP MIN	SEG_3 BMS STAT	RESERVED
0x13	SEG_4 CELL MAX		SEG_4 CELL MIN		SEG_4 TEMP MAX	SEG_4 TEMP MIN	SEG_4 BMS STAT	RESERVED
0x14	SEG_5 CELL MAX		SEG_5 CELL MIN		SEG_5 TEMP MAX	SEG_5 TEMP MIN	SEG_5 BMS STAT	RESERVED
0x15	HV PACK		RESERVED		RESERVED		RESERVED	
0x16	RESERVED		RESERVED		RESERVED		RESERVED	
0x17	RESERVED		RESERVED		RESERVED		RESERVED	
0x18	RESERVED		RESERVED		RESERVED		RESERVED	
0x19	RESERVED		RESERVED		RESERVED		RESERVED	
JCU								
0x20	TSAL	AIR1_SIG	AIR2_SIG	AIR_REL_PWR	AIR_REL_PWR	SDC	0	PRE_REL
0X21	HV_V		PRE_REL_MC_V			DIS_REL_MC_V		
SOC								
0x30~39	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

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

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- CAN Data map

Byte / CAN-ID	0	1	2	3	4	5	6	7
BAT								
HV BMS								
0x10	SEG_1 CELL MAX		SEG_1 CELL MIN		SEG_1 TEMP MAX	SEG_1 TEMP MIN	SEG_1 BMS STAT	RESERVED

0x11	SEG_2 CELL MAX		SEG_2 CELL MIN		SEG_2 TEMP MAX	SEG_2 TEMP MIN	SEG_2 BMS STAT	RESERVED
0x12	SEG_3 CELL MAX		SEG_3 CELL MIN		SEG_3 TEMP MAX	SEG_3 TEMP MIN	SEG_3 BMS STAT	RESERVED
0x13	SEG_4 CELL MAX		SEG_4 CELL MIN		SEG_4 TEMP MAX	SEG_4 TEMP MIN	SEG_4 BMS STAT	RESERVED
0x14	SEG_5 CELL MAX		SEG_5 CELL MIN		SEG_5 TEMP MAX	SEG_5 TEMP MIN	SEG_5 BMS STAT	RESERVED
0x15	HV PACK		RESERVED		RESERVED		RESERVED	
0x16	RESERVED		RESERVED		RESERVED		RESERVED	
0x17	RESERVED		RESERVED		RESERVED		RESERVED	
0x18	RESERVED		RESERVED		RESERVED		RESERVED	
0x19	RESERVED		RESERVED		RESERVED		RESERVED	
JCU								
0x20	TSAL	AIR1_SIG	AIR2_SIG	AIR_REL_PWR	AIR_REL_PWR	SDC	-	PRE_REL
0X21	HV_V		PRE_REL_MC_V			DIS_REL_MC_V		
SOC								
0x30~39	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
SYS								
LV BMS								
0x50	MaxCellVoltage		MinCellVoltage		Pack_Voltage		Stack_Voltage	
0x51	Pack_Current		CELL_Temp		FET_Temp		RESERVED	RESERVED
0x52	CB_ActiveCells		SafetyStatuA	SafetyStatusB	SafetyStatusC	PFStatusA	PFStatusB	PFStatusC
0x53	AlarmRawBits		FET_Status	RESERVED	Accumulated_Charge_Time			
LV CHARGER								
0x54	STAT_1	STAT_2	STAT_3	Fault_STAT	RESERVED	RESERVED	RESERVED	RESERVED
0x55	IAC_ADC		IBAT_ADC		VAC_ADC		VFB_ADC	
0x56~0x59	RESERVED							
SCU								
0x60	FR_Linear		FL_Linear		RR_Linear		RL_Linear	
0x61	FR_WheelSpeed		FL_WheelSpeed		RR_WheelSpeed		RL_WheelSpeed	
0x62	Steer_Linear		Brake_Pressure		-	-	-	-
DL								
0x70								
PM100DX								
0x0A0	Module A Temp		Module B Temp		Module C Temp		Gate Driver Board Temp	
0x0A1	Control board Temp		RTD#1 Temp		RTD#2 Temp		RTD#3 Temp	
0x0A2	~~Coolant Temp~~		~~Hot Spot Temp~~		Motor Temp		Torque Shudder	
~~0x0A4~~	~~Forward switch~~	~~Reverse switch~~	~~Brake switch~~	~~REGEN Disable Switch~~	~~Ignition switch~~	~~Start switch~~	~~Valet Mode~~	~~Status of Digital Input~~
0x0A5	~~Motor Angle~~		Motor Speed 1		~~Electrical Output Frequency~~		~~Delta Resolver Filtered~~	
0x0A6	Phase A current		Phase B current		Phase C current		DC Bus Voltage 1	
0x0A7	DC Bus Voltage 2		Output Voltage		VAB_Vd_Voltage		VBC_Vd_Voltage	
0x0A8	~~Flux command~~		~~Flux feedback~~		Id_feedback		Iq_feedback	

0x0A9	~~1.5V Reference voltage~~		~~2.5V Reference voltage~~		~~5V Reference voltage~~		~~12V Reference voltage~~	
0x0AA	VSM State	~~PWM Frequency~~	Inverter State	Relay State	~~1. Inverter Run mode(Bit 0) 2. Inverter Active Discharge State(Bits 5-7)~~	~~1. Inverter Command Mode(5-Bit0) 2. Rolling Counter Value(5-Bit4 thru 5-Bit7)~~	~~1. Inverter Enable State(Bit 0) 2. Start Mode Active(Bit 6) 3. Inverter Enable Lockout(Bit7)~~	~~1. Direction Command(Bit 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 Fault Lo		POST Fault Hi		Run Fault Lo		Run Fault Hi	
0x0AC	Command Torque		Torque Feedback		Power on Timer			
0x0AD	Modulation Index		Flux Weakening Output		Id_command		Iq_command	
0x0B0	Torque Command		Torque Feedback		Motor Speed 2		DC Bus Voltage 3	
~~0x0C0~~	~~Torque Command~~		~~Speed Command~~		~~Direction Command~~	~~Inverter Enable(5.0) Inverter Discharge(5.1) Speed Mode Enable(5.2)~~	~~Command Torque Limit~~	
~~0x0C1~~	~~Parameter Address~~		~~R/W Command~~	~~Reserved~~	~~Data~~		~~Reserved~~	
~~0x0C2~~	~~Parameter Address~~		~~Write Success~~	~~Reserved~~	~~Data~~		~~Reserved~~	
Gyro								
0xff	-	ID	X_Data		Y_Data		Z_Data	