Dashboard CAN Protocol

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The CAN protocol used between Dashboard Controller and Master Controller

Base Address: 0x580

Messages

Base address offset: 0x000 - Driving Data

Parameter	Value
Direction	Master -> Dashboard
Transmission Rate	Periodically: 100ms
Size [bits : bytes]	48 : 6

Variable Name	Offset	Length in bits	Value Type	Unit	Description
SPEED	0	16	SINT	0.1 kmh	Current vehicle velocity
SOC	16	16	UINT	0.1 %	Current state of charge on accumulator
MAX_TEMPERATURE	32	16	SINT	0.1 degC	Current highest motor temperature

Base address offset: 0x001 - Car Status

Parameter	Value
Direction	Master -> Dashboard
Transmission Rate	Periodically: 100ms
Size [bits : bytes]	48 : 6

Variable Name	Offset	Length in bits	Value Type	Unit	Description
INSTRUCTION_INDEX	0	8	UINT		Index that can be used to look up instruction telling what to do next to get the car in drive. See table below instructions indexes.
CAR_STATE	8	8	UINT		The current state of the vehicle. See table below for states.
ERROR_CODE	16	32	UINT		Index that can be used to look up error. See table below for error codes.

Base address offset: 0x002 - Dashboard LED Status

Parameter	Value
Direction	Master -> Dashboard
Transmission Rate	Periodically: 100ms
Size [bits : bytes]	16 : 2

Variable Name	Offset	Length in bits	Value Type	Unit	Description
LED_IMD	0	1	BOOL		LED State. (0 = OFF, 1 = ON)
LED_AMS	1	1	BOOL		LED State. (0 = OFF, 1 = ON)
LED_SC	2	2	UINT		LED State. (00 = OFF, 01 = ON, 10 = Blink)
LED_EBS	4	1	BOOL		LED State. (0 = OFF, 1 = ON)
LED_DV	5	1	BOOL		LED State. (0 = OFF, 1 = ON)
LED_RDY	6	2	UINT		LED State. (00 = OFF, 01 = ON, 10 = Slow Blink, 11 = Fast Blink)
LED_LV	8	1	BOOL		LED State. (0 = ON, 1 = Fast Blink)

Base address offset: 0x003 - Mission Data

Parameter	Value
Direction	Master -> Dashboard
Transmission Rate	Periodically: 100ms
Size [bits : bytes]	48 : 6

Variable Name	Offset	Length in bits	Value Type	Unit	Description
MISSION_INDEX	0	8	UINT		An index telling what mission the car is in. See table below for mission indexes.
STATUS_TV	8	1	BOOL		Status if torque vectoring is enabled. (0 = OFF, 1 = ON)
STATUS_TC	9	1	BOOL		Status if traction control is enabled. (0 = OFF, 1 = ON)
STATUS_PL	10	1	BOOL		Status if power limiting is enabled. (0 = OFF, 1 = ON)
STATUS_TL	11	1	BOOL		Status if torque limiting is enabled. (0 = OFF, 1 = ON)
STATUS_LP	12	1	BOOL		Status if launch profile is enabled. (0 = OFF, 1 = ON)
STATUS_RB	13	1	BOOL		Status if regenerative braking is enabled. (0 = OFF, 1 = ON)
RB_AVAILABLE	14	1	BOOL		Status if regenerative braking is available. (0 = NO, 1 = YES)
TORQUE_LIMIT	16	16	UINT	0.1 Nm	The torque available for the current mission
POWER_LIMIT	32	16	UINT	0.1 kW	The power available for the current mission

Base address offset: 0x004 - Driving Data 2

Parameter	Value
Direction	Master -> Dashboard
Transmission Rate	Periodically: 100ms
Size [bits : bytes]	32 : 4

Variable Name	Offset	Length in bits	Value Type	Unit	Description
LV_BAT_VOLTAGE	0	16	UINT	0.1 V	Current voltage of low voltage battery

Variable Name	Offset	Length in bits	Value Type	Unit	Description
RANGE_EST	16	16	UINT	0.1 km	Estimated range remained on the battery

Base address offset: 0x050 - Dashboard Button Status

Parameter	Value
Direction	Dashboard -> Master
Transmission Rate	Periodically: 100ms
Size [bits : bytes]	8 : 1

Variable Name	Offset	Length in bits	Value Type	Unit	Description
BUTTON_SAFETY	0	1	BOOL		Status of the safety button. (0 = OFF, 1 = ON)
BUTTON_TRACTIVE	1	1	BOOL		Status of the tractive button. (0 = OFF, 1 = ON)
BUTTON_DRIVE	2	1	BOOL		Status of the drive button. (0 = OFF, 1 = ON)
BUTTON_1	3	1	BOOL		Status of the extra button 1. (0 = OFF, 1 = ON)
BUTTON_2	4	1	BOOL		Status of the extra button 2. (0 = OFF, 1 = ON)
BUTTON_3	5	1	BOOL		Status of the extra button 3. (0 = OFF, 1 = ON)
BUTTON_4	6	1	BOOL		Status of the extra button 4. (0 = OFF, 1 = ON)

Base address offset: 0x051 - Dashboard Status

Parameter	Value
Direction	Dashboard -> Master
Transmission Rate	Periodically: 100ms
Size [bits : bytes]	8 : 1

Variable Name	Offset	Length in bits	Value Type	Unit	Description
DASHBOARD_STATUS_INDEX	0	8	UINT		An index telling the status of the dashboard. See table below for status indexes.

Base address offset: 0x052 - Set Mission

Parameter	Value
Direction	Dashboard -> Master
Transmission Rate	Aperiodically
Size [bits : bytes]	8 : 1

Variable Name	Offset	Length in bits	Value Type	Unit	Description
SET_MISSION	0	8	UINT		Set the current mission. See table below for mission indexes.

Tables

Instructions

A string explaining to the driver what to do next to get the car into STATE_DRIVE.

Index	Description
0	Initializing
1	Press Safety Button
2	Wait for SC to be Enabled
3	Press Tractive Button
4	Wait for AMS to be Ready
5	Press Brake Predal
6	Torque Pedal Fault
7	Pre-Charging. Wait
8	Press Drive Button
9	Remove Error
10	Close Shutdown Circuit
11	To Exit Drive: Press Shutdown Button

Error codes

Offset	Description	Offset	Description	Offset	Description
0	Data logging not active	9	INS error	18	High temperatures in cooling system
1	Shutdown circuit error	10	Steering angle out of range		
2	Shunt error	11	Brake Pressure out-of-range (Front)		
3	AMS error	12	Brake Pressure out-of-range (Rear)		
4	Dashboard error	13	Torque pedal out of range		
5	Inverter 4 error	14	Torque pedal plausibility error		
6	Inverter 3 error	15	RTDS error		
7	Inverter 2 error	16	Cooling pump error		
8	Inverter 1 error	17	Low Voltage Battery critically low		

Mission Indexes

Index	Description
0	(None. No mission selected)
1	Acceleration
2	Skidpad
3	Sprint
4	Endurance
5	Brake Test

Index	Description
6	Testing

Car States

Index	Description
0	STATE_INITIALIZE
1	STATE_IDLE
2	STATE_ENABLING_SC
3	STATE_SC_ENABLED
4	STATE_PRECHARING
5	STATE_TRACTIVE
6	STATE_DRIVE
7	STATE_ERROR

Dashboard Statuses

Index	Description
0	Unknown (Not received yet)
1	
2	
3	
4	
5	
6	
7	

Template

ID: 0xXXX -

Parameter	Value
Direction	->
Transmission Rate	Periocally: 100ms/Aperiodically

Variable Name	Offset	Length in bits	Value Type	Unit	Description