Variable	Disc	Module	In Dictionary?	Bit Length	Resolution	Units	Value 1 (or Low Range)	Value 2 (or High Range)	Possible Value 3	Possible Value 4	Possible Value 5	Possible Value 6	Possible Value 7	Possible Value 8			
prev_state	module's previous state	ALL	Yes	8	N/A	N/A	FAULT_STATE	DASH_CTL (IDLE)	READY_FOR_LA	PUSH_PHASE	COAST	NORMAL_BRAKING	EMERGENCY_BRA	FRONT_AXLE_BRA	REAR_AXLE_BRA	WAITING_FOR_	SAFE
state	module's current state	ALL	Yes	8	N/A	N/A	FAULT_STATE	DASH_CTL (IDLE)	READY_FOR_LA	PUSH_PHASE	COAST	NORMAL_BRAKING	EMERGENCY_BRA	FRONT_AXLE_BRA	REAR_AXLE_BRA	WAITING_FOR_	SAFE
next_state	module's next state	ALL	Yes	8	N/A	N/A	FAULT_STATE	DASH_CTL (IDLE)	READY_FOR_LA	PUSH_PHASE	COAST	NORMAL_BRAKING	EMERGENCY_BRA	FRONT_AXLE_BRA	REAR_AXLE_BRA	WAITING_FOR_	SAFE
FAULT	holds value of specific fault type	ALL	Yes	8	N/A	N/A	HEALTHY	GLOBAL_INITS_FAILED	LOCAL_INITS_FA	ILLEGAL_STATE	ILLEGAL_ROLE	UNINITIALIZED_HANDL	CAN_BUS_ERROR	CAN_INTERRUPT_ERROR			
PREV_FAULT	holds last value of fault	ALL	Yes	8	N/A	N/A	HEALTHY	GLOBAL_INITS_FAILED	LOCAL_INITS_FA	ILLEGAL_STATE	ILLEGAL_ROLE	UNINITIALIZED_HANDL	CAN_BUS_ERROR	CAN_INTERRUPT_ERROR			
SOFTWARE_VER	version of flashed software	ALL	Yes	16	N/A	N/A	TBD	TBD									
WCM.status	Status of WCM	WCM	No	8	N/A	N/A	Running	Fault	Shutdown								
HB1_spd	Speed of HB Wheel 1	MCM	Yes	16	0.07629	RPM	0	5000									
HB2_spd	Speed of HB Wheel 2	MCM	Yes	16	0.07629	RPM	0	5000									
HB3_spd	Speed of HB Wheel 3	MCM	Yes	16	0.07629	RPM	0	5000									
HB4_spd	Speed of HB Wheel 4	MCM	Yes	16	0.07629	RPM	0	5000									
HB_cmdV	Commanded Output Voltage of HB Wheels	MCM	Yes	8	1.00000	N/A	0	4095									
Brake_PWM1_intensity	0-100% b1	BCM	Yes	8	0.39063	N/A	0	100									
Brake_PWM2_intensity	0-100% b2	BCM	Yes	8	0.39063	N/A	0	100									
Brake_PWM3_intensity	0-100% b3	BCM	Yes	8	0.39063	N/A	0	100									
Brake_PWM4_intensity	0-100% b4	BCM	Yes	8	0.39063	N/A	0	100									
Pressure_1	Air System Pressure Sensor 1	BCM	Yes	8	0.58594	PSI	0	150									
Pressure_2	Air System Pressure Sensor 2	BCM	Yes	8	0.58594	PSI	0	150									
Pos_x	Position Down the Tube (Forward +)	VNM	Yes	16	0.02594	m	0	1700									
Pos_y	Position Across the Tube (Rightward +)	VNM	Yes	16	0.00003	m	-1	1	signed								
Pos_z	Position Vertically in Tube (Upward +)	VNM	Yes	16	0.00003	m	-1	1	signed								
Vel_x	Veloicty Down the Tube (Forward +)	VNM	Yes	16	0.00168	m/s	-10	100	signed								
Vel_y	Veloicty Across the tube (Rightward +)	VNM	Yes	16	0.00168	m/s	-10	100	signed								
Vel_z	Velocity Upwards or Downards (Up +)	VNM	Yes	16	0.00168	m/s	-10	100	signed								
Acc_x	Acceleration Down the Tube (Forward +)	VNM	Yes	16	0.00122	m/s^2	-40	40	signed								
Acc_y	Acceleration Across the Tube (Rightward +	VNM	Yes	16	0.00122	m/s^2	-40	40	signed								
Acc_z	Acceleration Upwards (Up +)	VNM	Yes	16	0.00122	m/s^2	-40	40	signed								
FRONT_STRIP_CNT	tape strip count	VNM	Yes	16													
MID_STRIP_CNT	tape strip count	VNM	Yes	16													
REAR_STRIP_CNT	tape strip count	VNM	Yes	16													
P_tube	Tube Pressure	VSM	Yes	16	1.60217	Pa	0	105000									
Door_1	Door 1 State	VSM	Yes	8	N/A	N/A	Closed	Open									
Door_2	Door 2 State	VSM	Yes	8	N/A	N/A	Closed	Open									
Pitch	Pitch attitude	VNM	Yes	16	0.00549	Deg	-180	180	signed								
Roll	Roll attitude	VNM	Yes	16	0.00549	Deg	-180	180	signed								
Yaw	Yaw attitude	VNM	Yes	16	0.00549	Deg	-180	180	signed								
T_motor1	HB Wheel Motor 1 Temp	VSM	No	8	0.58594	C	0	150									
T_motor2	HB Wheel Motor 2 Temp	VSM	No	8	0.58594	C	0	150									
T_motor3	HB Wheel Motor 3 Temp	VSM	No	8	0.58594	C	0	150									
T_motor4	HB Wheel Motor 4 Temp	VSM	No	8	0.58594	C	0	150									
T_HV1	HV Wiring Point 1 Temp	VSM	Yes	8	0.58594	C	0	150									
T_HV2	HV Wiring Point 2 Temp	VSM	Yes	8	0.58594	C	0	150									
T_cabin	Cabin Temperature	VSM	Yes	8	0.58594	C	0	150									
T_WCM1	WCM Heatsink 1 Temp	VSM	No	8	0.58594	C	0	150									
T_WCM2	WCM Heatsink 2 Temp	VSM	No	8	0.58594	C	0	150									
T_12V1	Temp 12V battery 1	VSM	Yes	8	0.58594	C	0	150									
T_12V2	Temp 12V battery 2	VSM	Yes	8	0.58594	C	0	150									
Brake_1_spd	Speed of Braking Wheel 1	BCM	Yes	16	0.07629	RPM	0	5000									
Brake_2_spd	Speed of Braking Wheel 2	BCM	Yes	16	0.07629	RPM	0	5000									
Brake_3_spd	Speed of Braking Wheel 3	BCM	Yes	16	0.07629	RPM	0	5000									
Brake_4_spd	Speed of Braking Wheel 4	BCM	Yes	16	0.07629	RPM	0	5000									
Kelly_1	Kelly Controller 1 State	MCM	Yes	8	N/A	N/A	No Fault	Fault									
Kelly_2	Kelly Controller 2 State	MCM	Yes	8	N/A	N/A	No Fault	Fault									
Kelly_3	Kelly Controller 3 State	MCM	Yes	8	N/A	N/A	No Fault	Fault									
Kelly_4	Kelly Controller 4 State	MCM	Yes	8	N/A	N/A	No Fault	Fault									
Air_system	Air System State	BCM	Yes	8	N/A	N/A	Main Purge Open	Deflated	Inflated								
Air_actuate	Air System Command	Dash	Yes	8	N/A	N/A	Open Main Purge	Deflate	Inflate	Stuck Valve 1 (rapid t	Stuck Valve 2 (rapid	Stuck Valve 3 (rapid togg	Stuck Valve 4 (rapid toggle)				
Brake_actuate_1	Brake Wheel 1 Command	Dash	Yes	8	N/A	N/A	No Brake	Brake									
Brake_actuate_2	Brake Wheel 2 Command	Dash	Yes	8	N/A	N/A	No Brake	Brake									
Brake_actuate_3	Brake Wheel 3 Command	Dash	Yes	8	N/A	N/A	No Brake	Brake									
Brake_actuate_4	Brake Wheel 4 Command	Dash	Yes	8	N/A	N/A	No Brake	Brake									
ABS_state	ABS enabled for braking	Dash	Yes	8	N/A	N/A	No ABS	ABS Enabled									
Contactor_CMD	Command the contactor open or closed	Dash	Yes	8	N/A	N/A	Contactor Closed	Contactor Open									
STRIP_DETECTION_LOST	When VNM loses the detection of the color	VNM	Yes	8	N/A	N/A	Strips Working Nominal	Detection Lost									
TP ADC	Total pack voltage from pack voltage taps	BMS	No	16	1.00000	Volts	0	155									
Pack Summed Voltage	Total pack voltage as summed from cell vol	BMS	No	16	1.00000	Volts	0	155									
Pack Current	Current registered by LEM halleffect	BMS	No	16	1.00000	Amps	0	550									
Populated Cells	Number of cells populated by the BMS. Unl	BMS	No	8	1.00000	N/a	1	36									
Low Cell Voltage	Lowest cell level voltage in monitored string	BMS		16	1.00000	Volts	0	5									
Low Cell Voltage ID	ID of cell with lowest voltage	BMS		8	1.00000	N/a	1	36									
High Cell Voltage	Highest cell level voltage in monitored strin	BMS		16	1.00000	Volts	0	5									
High Cell Voltage ID	ID of cell with highest voltage	BMS		8	1.00000	N/a	0	36									
HIgh Temperature	Highest thermistor reading in pack	BMS		8	0.50000	Celciu	0	86									
High thermistor ID	ID of thermistor with highest reading	BMS		8	1.00000	N/a	1	160									
Low Temperature	Lowest thermistor reading in pack	BMS		8	1.00000	Celciu	0	86									
Low Thermistor ID	ID of thermistor with lowest reading	BMS		8	0.62109	N/a	1	160									
Fan Voltage	Voltage to battery fans	BMS		16	1.00000	Volts	0	15									
Low Internal Resistance	Lowest cell level internal resistance	BMS		16	1.00000	mOhn	1	10									

Low Cell Resistance ID	ID of cell with lowest internal resistance	BMS		8	0.13672	N/a	1	36									
High Internal Resistance	Highest cell level internal resistance	BMS		16	0.00023	mOhm	0.01	15									
High Cell Resistance ID	ID of cell with highest internal resistance	BMS		8	0.13672	N/a	1	36									
Relay	Status of battery box relays	BMS		8		n/a											