Vehicle model:
https://github.com/howroyd/ELEVATE

	Bus	My Name	Make good	CAN ID	Start bit	Length (bits)	Type	Order	Scalar	Offset	RT Msg ID	RT Msg Name	Rate (Hz)
1	EvCAN	Pwr Aif Curr W	*10	0x54f	16	8	Unsigned	Motorola Seq	0.2	0	2005	Fuel inj 1 PW	10
2	EvCAN	Pwr PTC	*10	0x54f	42	6	Unsigned	Motorola Seq	0.0333	0	2006	Fuel inj 2 PW	10
3	EvCAN	SOC		0x55b	0	10	Unsigned	Motorola Seq	10	0	2007	Fuel inj 3 PW	10
4	EvCAN	Amps Motor	/10	0x1d4	17	11	Signed	Motorola Seq	0.4	0	2008	Fuel inj 4 PW	100
5	EvCAN	Volts Inverter		0x1da	0	8	Unsigned	Motorola Seq	0.5	0	2009	Fuel inj 5 PW	100
6	EvCAN	Amps Motor	/10	0x1da	21	11	Signed	Motorola Seq	0.2	0	2010	Fuel inj 6 PW	100
7	EvCAN	Speed Motor RPM	*10	0x1da	33	15	Signed	Motorola Seq	20	0	2011	Fuel inj 7 PW	100
8	EvCAN	Amps Batt		0x1db	1	10	Signed	Motorola Seq	0.1	0	2012	Fuel inj 8 PW	100
9	EvCAN	Volts Batt	*10	0x1db	16	10	Unsigned	Motorola Seq	2	0	2025	PASSTHROUGH16bit	100
10	EvCAN	Pwr HV Avail kW	/10	0x1dc	0	8	Unsigned	Motorola Seq	0.1	0	2026	Auxiliary 2	100
11	EvCAN	Speed Wheel L	*10	0x284	0	16	Unsigned	Motorola Seq	20	0	2027	Auxiliary 3	50
12	EvCAN	Speed Wheel R	*10	0x284	16	16	Unsigned	Motorola Seq	20	0	2028	Auxiliary 4	50
13	EvCAN	Speed Wheel Ave	*10	0x284	32	16	Unsigned	Motorola Seq	20	0	2013	Fuel inj 1 cut	50
1	CarCAN	Speed		0x176			Unsigned						
2	CarCAN	Speed		0x176			Unsigned						
3	CarCAN	Amps Motor		0x180			Signed		0.2				
4	CarCAN	Throttle		0x180			Unsigned						
5	CarCAN	Speed Motor		0x280			Unsigned						
6	CarCAN	Speed Wheel FR		0x284			Unsigned						
7	CarCAN	Speed Wheel FL		0x284			Unsigned						
8	CarCAN	Speed Vehicle		0x284			Unsigned						
9	CarCAN	Volts Batt 12V		0x292			Unsigned		0.01				
10	CarCAN	Brake		0x292			Unsigned		1.28				
11	CarCAN	Pwr Climate		0x510			Unsigned		0.25				
12	CarCAN	SOC		0x55b			Unsigned						
13	CarCAN	SOH		0x5b3			Unsigned						
14	CarCAN	GIDs		0x5b3			Unsigned						
15	CarCAN	Odometer		0x5c5			Unsigned						

message ID	Signal name	Car Can											EV Can					
		BCM	STRG	M&A	EPS	AV	A-BAG	EHS\ PKB	IPDM-E	BRAKE	ABS	EV\HEV	INV\MC	E-SHIFT	HVAC	TCU	OBC	HVBAT
	Buzzer output signal	T		R								T						
	Daytime running light request signal.	T							R									
	Door switch signal	T		R					R	R								
625	Front fog light request signal	T		R					R									
	Front wiper request signal	T							R									
	High beam request signal	T		R					R									
	Horn reminder signal	T							R									
	Low beam request signal	T							R									
	Low tire pressure warning lamp signal	T		R														
	Meter display signal	T		R														
	Position light request signal	T		R					R									
	Rear window defogger control signal	T							R									
									T			R						
	Sleep wake up signal	T		R					R	R								
	Stop lamp switch signal	T						R										
										R	T							
												T		R				
	Theft warning horn request signal	T							R									
	TPMS warning lamp signal	T		R														
60d,358	Turn indicator signal	T		R														
002	Steering angle sensor signal		T			R				R	R							
	Brake fluid level switch signal			T							R							
	Odometer signal	R		T		R						R						
58a	Parking brake switch signal			T							R							
280	Seat belt buckle switch signal (driver side)	R		T				R										
	Sleep-ready signal	R		T					T									
176	Vehicle speed signal (Meter)	R		T	R	R			R			R						
	Wake up signal	R		T														
	EPS warning lamp signal			R	T													
	Current time signal					T						R						
	Car crash information signal						T					R						
	Electric parking brake indicator lamp signal			R				T										
	Master warning signal			R				T										
	Front wiper status signal								T			R						
	Front wiper stop position signal	R							T									
	High beam status signal								T			R						
	Hood switch signal	R							T									
	Interlock/PNP switch signal	R							T									
		T							R									
	Low beam status signal								T			R						
	P position signal	R							T									
	Power switch ON signal	R						R	T									
		T							R	R								
	Power switch (push switch) status signal	R							T									
	Brake assist request signal									T	R							
	Brake backup operation signal									T	R							
1ca,292	Brake fluid pressure command signal									T	R							
	Brake system warning lamp signal			R						T								
	Brake warning lamp signal			R						T	T							
	Electrically-driven intelligent brake control signal									T	R							
1cb	Target braking force signal									T		R						
	ABS actuator and electric unit (control unit) control signal									R	T							
	ABS warning lamp signal			R							T							
	Brake warning lamp signal			R							T							
	Decel G signal							R		R	T							
	EBD malfunction signal									R	T							
	EBD operation signal									R	T							
284	Front LH wheel speed signal									R	T							
284	Front RH wheel speed signal									R	T							
284	Rear LH wheel speed signal							R		R	T							
284	Rear RH wheel speed signal							R		R	T							
300?	Side G signal									R	T							
	Stop lamp OFF relay signal									R	T							
130	TCS operation signal									R	T	R						
	Torque limit request signal										T	R						
	VDC OFF indicator lamp signal			R							T							
	VDC operation signal									R	T	R						
	VDC warning lamp signal			R							T							
	Vehicle speed signal (ABS)	R		R	R			R		R	T	R						
												T		R				
	Yaw rate signal									R	T							
	12-volt battery charge warning lamp request signal			R								T						
	A/C consumption power status display signal					R						T						
	A/C consumption signal			R		R						T						
	A/C expected consumption signal											T				R		
	A/C maximum power signal											T			R			
	A/C OFF average electricity consumption for driving range signal			R								T						
				T		R												
	A/C ON average electricity consumption for driving range signal			R								T						
				T		R												
180	Accelerator pedal position signal							R			R	T						
	ASCD status signal			R								T						
5b9,5bc	Charge status signal											T				R		
	Compressor ON inhibition signal											T			R			
	Current motor power signal			R		R						T						
	Current regenerative torque signal									R		T						
5e3	Driving range difference signal			R								T						
				T		R												
	Driving range flashing request signal			R								T						
	Driving range request signal			R								T						
5a9	Driving range signal			R								T						
	ECO mode request signal											T			R			
355	ECO tree signal			R		R						T						
180?	Electricity consumption signal			R								T						
	F/S CHG relay status signal											T					R	
	High voltage power supply status signal											T	R					
355	Instant ECO indicator signal			R								T						
	Keep SOC request signal											T						R
1db	Li-ion battery charging data signal					R						T						
55a	Li-ion battery temperature signal			R								T						
	Low battery charge warning lamp request signal			R								T						
	Maximum charge power signal											T					R	
	Maximum motor output power signal			R								T						
260:1	Maximum regenerable power signal			R								T						

message ID	Signal name	Car Can											EV Can					
		BCM	STRG	M&A	EPS	AV	A-BAG	EHS\ PKB	IPDM-E	BRAKE	ABS	EV\HEV	INV\MC	E-SHIFT	HVAC	TCU	OBC	HVBAT
	Motor charge preparation request signal											T	R					
	Motor discharge request signal											T	R					
	Motor torque control signal										R	T						
	Next charge time signal			R								T						
	Next departure time signal			R								T						
	Next pre-A/C time signal			R								T						
	Others consumption signal			R		R						T						
	Plug in warning display signal			R								T						
	Power limitation cause signal			R								T						
	Power limitation indicator lamp request signal			R								T						
	Power OFF permit signal	R										T						
	Power steering start activation request signal				R							T						
	Pre-A/C priority signal					R						T						
	Pre-A/C status signal											T				R		
	Pre-A/C timer signal					R						T						
	Pulse signal OFF signal											T	R					
	READY condition signal	R										T						
	READY to drive indicator lamp request signal			R								T						
	Rear window defogger status signal											T			R			
	Refrigerant pressure signal											T			R			
	Regenerative torque command signal											T	R					
	Remaining time to charge completion (100V) signal			R		R						T				R		
	Remaining time to charge completion (200V) signal			R		R						T				R		
	Shift P range request display signal			R								T						
	Soon charge switch request signal			R								T						
	System cut off signal											T	R					
	Target Li-ion battery remained energy signal											T						R
	Target motor torque signal											T	R					
	Timer A/C request signal											T			R			
180?	Traction motor consumption signal					R						T						
	VCM activation/deactivation command signal					R						T				R		
	VCM control signal									R	R	T						
	VCM status signal	R				R		R				T				R		
	Vehicle stop and parking brake operation request display signal			R								T						
	Vibration control switching signal											T	R					
	Diagnostic trouble code signal											R	T				T	T
	High voltage discharge permit signal											R	T					T
	High voltage power supply preparation completion signal											R	T					
	Input high voltage signal											R	T					
	Motor discharge status signal											R	T					
	Motor speed signal							R				R	T					
	Motor torque limit signal											R	T					
	System main relay ON permit signal											R	T					T
	Electric shift warning lamp signal											R		T				
				R								T						
	Electric shift warning massage signal											R		T				
				R								T						
176	Shift position signal											R	R	T				
		R		R				R			R	T	R					
	Shift refuse buzzer signal											R		T				
				R								T						
	A/C switch ON signal											R			T			
	Ambient sensor signal											R			T			
				R								T						
	Blower fan ON signal											R			T			
	Evaporator temperature signal											R			T			
	Target evaporator temperature signal											R			T			
	Timer A/C operation time signal											R			T			
	HV harness interlock signal (PTC)											R			T			
	Remote A/C request signal											R				T		
	Remote charge request signal											R				T		
	VCM sleep signal											R				T		
	AC input type signal											R				R	T	
	EV system warning lamp request signal											R					T	
				R								T						
	EVSE PWM communication signal											R					T	
	HV harness interlock signal (OBC)											R					T	
	Quick charge start/stop 1 signal											R					T	
	Quick charge start/stop 2 signal											R					T	
	Quick charge voltage signal											R					T	
	Quick charger connecting signal											R					T	
	Charge type signal											R					R	T
	Insulation resistance signal											R						T
	Li-ion battery available charge signal											R						T
				R								T				R		
	Li-ion battery capacity signal											R					R	T
				R								T				R		
	Li-ion battery cell control signal											R						T
	Li-ion battery charge completion signal											R						T
	Li-ion battery chargeable power signal											R						T
	Li-ion battery connector interlock signal											R						T
	Li-ion battery current signal											R					R	T
	Li-ion battery dischargeable power signal											R						T
	Li-ion battery gradual capacity loss signal											R						T
				R								T				R		
	Li-ion battery main relay cut request signal											R						T
	Li-ion battery voltage signal											R					R	T
	Next start time signal											R						T
	Power limit cause (LBC) signal											R						T
	Remaining time to charge completion signal											R					R	T

msgID	time between msgs	Byte	Bits		Description (Unofficial)	Byte Scale/Sign	Discussion	Possible Controler
11a	10ms	0	7 : 0		Only present during drive - not during charge		01,0d,11,4d,4e (MSBits probably selected gear: 4 for D/B, 3 for N, 2 for R)	Shift control module (2011/2012) VCM (2013+)
		1	7 : 0				40,80 (40 when car is ON, 80 when car is OFF)	
		2	7 : 0				00,04,80	
		3	7 : 0				55,aa	
		4	7 : 0				00,40,80,c0 uniform	
		5	7 : 0				00	
		6	7 : 0		Mux channel for byte 7		00..03 uniform	
		7	7 : 0		Activity only during startup, then holds a constant value for each channel		03..fc gaps	
					This message is needed by the inverter to keep it alive			
1d4	10ms	0	7 : 0				bf-f7	Might be VCM to inverter since commaned torque would be less noisy
		1	7 : 0				07..51	
		2	7 : 0		Motor Amps? Requested Torque?	2's comp	Less noisy than the 1da signal	
		3	7 : 4		These two are a Torque command, signed 16-bit value, MSB first			
		3	3 : 0				00..02;10,20..f0	
		4	7 : 0				[0,4,8,c][0,3,5,7]	
		5	7 : 0				06,40,44,46	
		6	7 : 0				[0,2,3,6..b]0	
		7	7 : 0		CRC byte for msg. Poly is 0x85; left shift; D0 first; 64 shifts padding with 0's on last 8		00..ff	
					This is message sent to the inverter to control torque Commands		interesting activity during drive - none during charge	
1da	10ms	0	7 : 0		Inverter voltage 2V/bit		01..b9 follows BVS until near end of six2dead drive (turtle?) or end of charging --> perhaps Battery Available Power Signal or inverter voltage?	Inverter
		1	7 : 0				00,42..64	
		2	7 : 4				00,08,18,19,1a,1f,20	
			3 : 0		Motor Amps	2's comp	Motor Amps * Motor Volts is really close to pack watts*40	
		3	7 : 0				Maybe 1lsb=0.5A	
		4	7 : 0		Motor Speed	2's comp	16 bits; 1 LSB = 0.5rpm? Stays at zero when applying torque with brake on so not likely volts.	
		5	7 : 0					
		6	7 : 0		Counter		00..03 uniform, 80..83 uniform, Think its a error state, this value & wih 0xb0 seems to give a state code	
		7	7 : 0		CRC		00..ff	
1db	10ms	0	7 : 0	BCS	Battery Current Signal	2's comp	11 bits; 1 LSB = 0.5A	Lithium Battery Controler aka "BMS"
		1	7 : 5					
			4 : 0					
		2	7 : 0	BVS	Battery Voltage Signal	int	10 bits; 1 LSB = 0.5V	
		3	7 : 6					
			5 : 0				2a	
		4	7 : 0				00	
		5	7 : 0				00	
		6	7 : 0		might be identifyer (mux) for byte 7 (unless that's a CRC)		00..03 uniform	
		7	7 : 0		Might be a CRC byte?		00..ff	
1dc	10ms	0	7 : 0		AVAILABLE HV BAT PWR; 1kW/bit		6e=110kW, less is seen below LBW, 31=51kW observed near turtle	Lithium Battery Controler aka "BMS"
		1	7 : 0				01..11	
		2	7 : 4		Looks like this is maximum current during charge?		[0-f]f	
		2	3 : 0					
		3	7 : 0		This value changes during QC		fd	
		4	7 : 0				01,05,08,0c uniform	
		5	7 : 0				08,38,c0,dc uniform	
		6	7 : 0				c6,cb,cd,dc uniform	
		7	7 : 0		CRC		00..ff; activity stops for large gap in middle of drive	
					LBC per Turbo3 work on isolating and documenting leaf battery syste			
1f2	10ms	0	5 : 0				00,08,10,60,68; mostly 10	VCM
		0	7 : 6					
		1	7 : 0		Commanded Charge Power?		64 drive, 84-64 charge (tapers at end)	
		2	7 : 0				00: ready,60:?? 20:charging	
		3	7 : 0				00	
		4	7 : 0				00	
		5	7 : 0		VCM State		11,12,14,18,1e,2a,32,34,3f; active at start of drive only	
		6	7 : 0		looks like a mux		00..03 uniform	
		7	7 : 0		doesn't look like a CRC if you use a filter using byte 6, steady values		0[0..f]	
284	20ms	0	7 : 0		Left wheel speed sensor; 16 bits	2's comp	00..47	VCM relay of ABS 284/285 Messages to Shift Sensor (see LAN-35) SS prevents parking when moving, reversing while going above 7mph, etc. My guess is that the thresholds dictate that there is no exceedence for any one wheel
		1	7 : 0				00..ff	
		2	7 : 0		Right wheel speed sensor; 16 bits	2's comp	00..47	
		3	7 : 0				00..ff	
		4	7 : 0				00..22	
		5	7 : 0		??? speed sensor. Maybe average of both rear?	2's comp	00..ff	
		6	7 : 0		distance traveled? (d/dt=0 when rpm=0)	2's comp	00..ff (wraps ~360 times in a 25 mile drive)	
		7	7 : 0		distance traveled? (d/dt=0 when rpm=0)	2's comp	00..ff	
					Not sure if left=left front, left rear, or avg(front,rear)			
380	100ms	0	7 : 0				02,03	On Board Charger or perhaps just QC daughter card for 2011-2012's
		1	7 : 0				04 drive/AC charge, 84 QC	
		2	7 : 0				10 drive, 13 qc, 22 end qc,	
		3	7 : 0		QC Voltage		21	
		4	7 : 0		QC Commanded Amperage		00	
		5	7 : 0				00	
		6	7 : 0				00	
		7	7 : 0				05,07,16,17,27,28,3a,8d,9e,ad,b0	
					This message is not present in 2013 and newer cars			
50a	103ms	0	7 : 0				04,84,85	
		1	7 : 0				02,13,33,40,42,53,72,73	
		2	7 : 0				00,a0	
		3	7 : 0		Some sort of temperature??		2c-44;	
		4	7 : 0				00,80	
		5	7 : 0				a0	
50b	103ms	0	7 : 0				00	
		1	7 : 0				00	

msgID	time between msgs	Byte	Bits			Description (Unofficial)	Byte Scale/Sign	Discussion	Possible Controler
		2	7	0				00,02,06 (for 2013: also 0x04)	
		3	7	0				c0 (for 2013: also 0x00)	
		4	7	0				00	
		5	7	0				00,60 (for 2013: 0x00 only)	
						Active only during drive, data mostly static, Its need for a keep alive on inverter so it does not shut down			
50c	103ms	0	7	0				00	
		1	7	0				00	
		2	7	0				00	
		3	7	0				00..03 uniform	
		4	7	0				5d,b2	
		5	7	0				0d,31,5f,63,9a,a6,c8,f4	
						No change during charge and drive.			
54a	100ms	0	7	0				12,3c- CC Off; a0,da- CC On Think its inverter temp	
		1	7	0				00 This this is a motor temp	
		2	7	0				70	
		3	7	0				06,0a,0b,0f	AC Auto Amp
		4	7	0		Climate control set point (MY2011,2012)		00,39,52,53,54	
		5	7	0				00	
		6	7	0				00	
		7	7	0				4f,8c-90	
54b	100ms	0	7	0		CC status?		00 CC on, 01 CC off (2013: 0x10 or 0x11)	
		1	7	0				08,76,78	
		2	7	0		Vent mode (face/feet/defrost)		80 CC off, 88 face only, 90 face/feet, 98 feet only, A0 feet/def, A8 def only	
		3	7	0		Vent mode (recerculating/fresh air		09 Rec, 12 vent, 92 def	
		4	7	2		Fan speed (1-7)		Shouldn't this be bits 7:3?	AC Auto Amp
			1	0					
		5	7	0				00	
		6	7	0				00	
		7	7	0		Alternates after every CC button press, probably to alert A/V to display CC info		00,01	
54c	100ms	0	7	0		AC evaporator temperature 0.25 C/bit?		drops with ac on (after short lag). No change with heater on	
		1	7	0		CC status?		66 CC on, ff CC off	
		2	7	0				00,40,c0	
		3	7	0				00	
		4	7	0				00	AC Auto Amp
		5	7	0		Fan voltage, 0.05 V/bit. Commanded fan speed is proportional to Voltage		[4..8,f][0,8]	
		6	7	0		Outside ambient (+56) in F, used for the "eyebrow" display on dash		0x92=90F;0x86=79F (90F & 79F read from dash)	
		7	7	0				00	
54f	100ms	0	7	0		Appears to be interior intake temp		4c..50 (2013: sometimes is <0x20 when the temp is definitely higher)	
		1	7	5				00,01	
		2	7	0		AC Power Consumption? Might be 50W/bit?		(0-20) Rises to a steady value with ac on. Off immediately with ac off. No change with heater on	
		3	7	6				00	
		4	7	0				07,0b	
		5	7	6		Status bits of AC Auto Amp		[0,4,8,c][0,1,2] drive; [0,4,8,c]0 uniform charge	AC Auto Amp
			5	0		PTC heater power consumption Watts? (300W/bit?)		(0-14) Goes up slowly with heater on; no change with ac on	
		6	7	0		~~Appears to track ambient in C~~		8E-96 drive , 00-18 charge (during high 80s F)	
		7	7	0		Probably "COMP USE PERMIT POWER" or how much VCM is willing to give Climate control	???	3e..2a six2dead; 36..42 100% charge	
						Probably not anything related to cell voltage here, perhaps just VCM cutting out climate during your turtle event, TT		declined on six2dead drive during which ambient temp rose; increased during charge --> battery voltage? 0,1,2 (and not 3) during long drive suggest select worst cell?	
55a	100ms	0	7	0				0x00	Inverter, reference TMS-31
		1	7	0		Inverter communications board temp. 0.5c per bit		4a..5a drive; 48..5a charge; battery?	
		2	7	0		IGBT? Temperature		3d..60 drive; 45..56 charge; controller?	
		3	7	0				0x00	
		4	7	0		Temperature only active during drive (IGBT driver board?)		5f..8d drive; 5f charge; motor?	
		5	7	0		Motor Temperature		4b..4c drive; 48..5c charge; charger? temperature?	
		6	7	0				5b drive; 3a,5b,72,82,83 charge	
		7	7	0				08,28,48,c8	
						All seem to be 0.5c per bit. Byte 1 matches up with independent temp measurements near inverter case using Brusa and external thermistor		motor, controller, charger, battery temperatures?	
55b	100ms	0	7	0		SOC		59..8c	Probably Lithium Battery Controller/"BMS"
		1	7	6				[0,4,8,c]0	
			5	0					
		2	7	0				55,aa	
		3	7	0				00	
		4	7	0				c8..ff	
		5	7	0				[0,4,8,c]0	
		6	7	0				1[0..3]	
		7	7	0		CRC		00..ff	
56e	100ms	0	7	0		CarWings Status		46 status; 86 idle; 4E CC on; 56 CC off; 66 remote charge start;	TCU
						This message is only present in SV and SL models			
5a9	512ms	0	7	0		Active during drive, FF charge			Probably VCM to TCU for carwings (engineering data)
		1	7	0		Active during drive, FF charge			
		2	7	0					
		3	7	0				Seems to be related to SOC but not LTI	
		4	7	0					
		5	7	0					
		6	7	0					
		7	7	0					
								New message appeared after recall/update in March 2012	
5b9	512ms	0	7	3	AFB	Active Fuel Bars	int	18,19,20,28,30	VCM to TCU for carwings
			2	0	CMR	Charge Minutes Remaining	2's comp		
		1	7	0				0e,b4,d2,f0	

msgID	time between msgs	Byte	Bits		Description (Unofficial)	Byte Scale/Sign	Discussion	Possible Controler
		2	7 : 0				62,63,64	
		3	7 : 0		38 before, ff during, 0e after 80% charge		0c,38,48,84,c0,d0,fc; #5min charging?	
		4	7 : 0				28	
5bc	500ms	0	7 : 0	ACS	Available Charge Signal (AKA "gids")	int	14..21;10 bits, 0-281 for most vehicles; 1 LSB = 65-85WH	
		1	7 : 6					
			5 : 0				000..003	
		2	7 : 0				04,05,06,07,0c,25,[2,4,6,8,a,c,e][6,7,c]	
		3	7 : 0		This looks like a temperature reading...		4f,8c-90	
		4	7 : 0					
		5	7 : 0		mux?		04..06	
		6	7 : 0				1f..24,40..43	
		7	7 : 0				[0,1..f][0,2..e],ff	
5bf [1]	100ms	0	7 : 0				00	
		1	7 : 0				Line voltage?	
		2	7 : 0				00 - possible charging indicator (95-95 when charging?)	
		3	7 : 0		Charger HV bus voltage. bit*1.25 +182 is very close but not quite right		Battery Voltage as seen by the OBC	
		4	7 : 0		Status bits of various charging components		B0 when QC; 30 when done QC. 60 when L2 charging MSB=QC charging? MSB-1=L2 charging?	OBC- On Board Charger (2011-2012 only)
		5	7 : 0		QC status		00 during drive or L1/L2 charging, 03 during QC. 02 start up of qc	
		6	7 : 0				Charger Output Current (0x10=2A L1, 0x40=8A L2, 0x08 observed during startup)	
		7	7 : 0				09,1a,24,2b,3b,3c - possible charging indicator?	
5c0	500ms	0	7 : 5			?	40,80,c0	Lithium Battery Controller/"BMS"
			4 : 0					
		1	7 : 0				9c,9e,a0	
		2	7 : 0				9c,9e,a0	
		3	7 : 0		linear positive ramp up during charge and negative ramp down during discharge. Starts from 00 regardless of initial charge level. Charging time?	2's comp?	00,ed..ff; (small negative number?)	
		4	7 : 0				a4 for TT, I have 7C here	
		5	7 : 0				0c,c8,cc	
		6	7 : 0				00 for TT (?) I have 1B,1C,1D,1E,1F here	
		7	7 : 0				00	
68c	REQ only	0	7 : 0		Always 0x00, only sent during carwings request		VCM Wake up Signal from TCU. '11 and '12 models also have a logic line from TCU to VCM. '13+ just use this message to wake up VCM	TCU

										Possible Controler
msgID	Time Between Msgs	Byte	Bits			Description (unofficial)	Byte Scale/Sign	Discussion		Signal name
002	10ms	0	7	:	0	Steering Angle LSB:MSB Left is negative Degrees = value/10 (3600 = 360.0deg)				Steering angle sensor signal. Goes to AV unit, Brake, and ABS modules
		1	7	:	0					
		2	7	:	0	Rate of steering angle change, unsigned				
		3	7	:	0			07		
		4	7	:	0			Very active (00-ff)		
02a	100ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					
						All zeros?				
130	10ms	0	7	:	0					ABS Module
			7	:	6					
			5	:	5			1 = Traction control off???		
		1	4	:	0					
		2	7	:	0					
								TCS operation signal		
174	10ms	0	7	:	0			00		Probably VCM Relay from eshift on EV CAN
		1	7	:	0			00		
		2	7	:	0			00		
		3	7	:	0			AA:Park/Neutral BB:Drive 99:Reverse		
		4	7	:	0			00...0F		
		5	7	:	0			00		
		6	7	:	0			00		
		7	7	:	0			00		
176	10ms	0	7	:	0	speed		scalar of 0.0725 seems to translate roughly to mph; absolute (always positive)		Might be VCM relay of Inverter message of motor RPM?
		1	7	:	0			might be motor volts instead of speed		
		2	7	:	0			scalar of .0091 seems to translate roughly to mph; always positive		
		3	7	:	0	speed		might be motor volts instead of speed		
		4	7	:	0			00		
		5	7	:	0			00		
		6	7	:	0			00...0F		
								Might be motor RPM		
180	10ms	0	7	:	0			00		VCM
		1	7	:	0			00		
		2	7	:	0					
		3	7	:	4	Motor Amps		2's compliment; Tracks power when multiplied with 176.23 and divided by ~30 or 176.01 divided by ~3.6		
		3	3	:	0					
		4	7	:	0	Motor Amps?		Very similar to 180:D2,D3 expect is clipped and decays to zero during regen		
		5	7	:	0	throttle position				
		6	7	:	0					
		7	7	:	0			00		
								174,176, and 180 are sent together (one after another)		
1ca	10ms	0	7	:	0	Brake Pressure		Not present on MY2013		Brake Control Module
		1	7	:	0	Brake Pressure				
		2	7	:	0	Brake Pressure				
		3	7	:	0	Brake Pressure				
		4	7	:	0					
		5	7	:	2	Regen Braking				
			1	:	0					
		6	7	:	0					
		7	7	:	0					
1cb	10ms	0	7	:	0	Target Regen Braking		Appears to be target regen before getting qualified by charge level, etc.		Brake Control Module
		1	7	:	5					
			4	:	0					
		2	7	:	0			Units track motor amps in m180.23		
		3	7	:	5	Target Braking				
			4	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
								1CB then 1CA sent together. Target braking is from Brake control module.		
1d5	10ms	0	7	:	0			Units track motor amps in m180.23; Appears to be target regen qualified by other factors.		
			7	:	5	Applied Regen Braking				
		1	4	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
1f9	10ms	0	7	:	0			00		In 370Z, this has engine RPM. May just be a vestigial message from the VCM
		1	7	:	0			00		
		2	7	:	0			00		
		3	7	:	0			00		
		4	7	:	0			00		
		5	7	:	0			00		
		6	7	:	0			00		
		7	7	:	0			00		
215	20ms	0	7	:	0			FF		
		1	7	:	0			FF		

										Possible Controler
msgID	Time Between Msgs	Byte	Bits			Description (unofficial)	Byte Scale/Sign	Discussion		Signal name
		2	7	:	0			FF		
		3	7	:	0			FF		
		4	7	:	0			FF		
		5	7	:	0			FF		
216	20ms	0	7	:	0					Related to proximity key? I saw these messages on CAR can when there shouldn't be activity but I was walking near the car.
		1	7	:	0					
245	20ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0	Just ramps and wraps				
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
260	20ms	0	7	:	0	Available power		50-5A observed in normal driving, decays to 31 (51kW) around turtle		My guess is this goes to the cluster display since the regen bubbles are on here. Bytes 2-3 probably drives the inner "power" bubbles.
		1	7	:	0	Available regen		Used to generate regen bubbles with hysteresis. Bubbles turn at @ 6,C,12,&18 and turn off at 0,6,C, & 12 respectively		
		2	7	:	0			Units are unknown (100-16000) - doesn't include accessory-		
		3	7	:	0	Motor Amps		It is probably the dash power display "inner" bubbles. Observe byte 2 at 0x19 and byte 3 at 00 when at idle.		
280	20ms	0	7	:	0			Some activity here even when car is off, might be related to other dash lights (like the red key light)		Might be cluster? or "eyebrow"
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0			.0062 scalar seems to match mph		
		5	7	:	0	Motor Speed				
		6	7	:	0					
		7	7	:	0					
								370Z had seatbelt status as byte 0 bit 0. Need to verify. Could probably sync video of startup and CAN log to get the various lights and bytes used		
284	20ms	0	7	:	0	Front Right Wheel Speed		.0118 scalar		
		1	7	:	0					
		2	7	:	0			.0118		
		3	7	:	0	Front Left Wheel Speed				
		4	7	:	0			.0245		
		5	7	:	0	Vehicle Speed				
		6	7	:	0					
		7	7	:	0					Looking at "370Z" info, these match the same as the 'Z CAN bus. This is probably a common ABS module from Nissan
285	20ms	0	7	:	0			.0118		
		1	7	:	0	Rear Right Wheel Speed				
		2	7	:	0			.0118		
		3	7	:	0	Rear Left Wheel Speed				
		4	7	:	0					
		5	7	:	0	all zero				
		6	7	:	0					
		7	7	:	0					
292	20ms	0	7	:	0					This also looks similar to 370Z info
		1	7	:	0					
		2	7	:	0					
		3	7	:	0	12V battery Voltage as seen by the brake computer 0.1V/bit		7F= 12.7 Volts		
		4	7	:	0					
		5	7	:	0					
		6	7	:	0	Friction brake pressure (all model years)		measured to provide the same braking force as 55 regen motor amps (cc180.23) per tick		
		7	7	:	0					
2de	10ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0			03		
		7	7	:	0			CA		
300	20ms	0	7	:	0			Steering force applied to wheel (from turbo2ltr's notes)		Steering Angle Sensor
342		0	7	:	0			Only saw once in a log about the time I left to go inside. Maybe related to the "key is leaving the car while on" chirp?		370Z notes this is related to key fob info
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
351	100ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					

										Possible Controler
msgID	Time Between Msgs	Byte	Bits				Description (unofficial)	Byte Scale/Sign	Discussion	Signal name
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
354	40ms	0	7	:	0		Vehicle Speed			Comes from ABS unit, similar to 370Z
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0				0x40 when traction control is off	
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
355	40ms	0	7	:	0		Vehicle Speed			Instrument cluster to VCM
		1	7	:	0					
		2	7	:	0		Vehicle Speed			
		3	7	:	0					
		4	7	:	0		Selected dash miles/eff units		0x00=km;0x20=mi	
		5	7	:	0					
		6	7	:	0		Dash odometer units		0x60=miles;0x40=km	
							On my 2012 this is a 7 byte message (2011 8 byte?)			
358	100ms	0	7	:	0					Body Control Module
			7	:	7		headlights (1=on)		changes with manual control or auto	
		1	6	:	0					
			7	:	4					
			3	:	3		Right turn signal			
			2	:	2		Left turn signal			
		2	1	:	0					
		3	4	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
35d	100ms	0	7	:	0					Body Control Module
		1	7	:	0					Possibly Similar to 370z, there's wiper data here
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
385	100ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0		Tire Pressure 1 (X4)			
		3	7	:	0		Tire Pressure 2 (X4)			
		4	7	:	0		Tire Pressure 3 (X4)			
		5	7	:	0		Tire Pressure 4 (X4)			
		6	7	:	4		valid bits for D2:D5			
		7	3	:	0					
										Tire Pressure Monitoring System
421	60ms	0	7	:	0		Controls PRNDL display on dash 0x18 = Neutral 0x08 = Park 0x20 = Drive 0x10 = Reverse 0x38 = ECO		VSP sound follows	VCM relay from shifter on EV bus to Instrument panel and VSP
509		0	7	:	0				MY2013 only	
		1	7	:	0					
		2	7	:	2		time:seconds (0-59)			
			1	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
50a	100ms	0	7	:	0					VCM relay from A/C Auto Amp and AC Pressor Sensor (which is measured directly from VCM) Message is identical on EV CAN and CAR CAN
		1	7	:	0					
		2	7	:	0					
		3	7	:	0		AC compressor pressure?		rises with AC on; slow decay when off	
			7	:	2					
		4	1	:	1		Rear defrost on/off			
			0	:	0					
		5	7	:	0					
									AC compressor pressure goes directly into VCM, this value is only for Consult reference	
50d	100ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					

										Possible Controler
msgID	Time Between Msgs	Byte	Bits				Description (unofficial)	Byte Scale/Sign	Discussion	Signal name
		5	7	0						
		6	7	0						
		7	7	0						
510	100ms	0	7	0					increments each ~ 6 seconds	VCM relay from A/C Auto Amp, to eyebrow display and A/V unit
		1	7	0						
		2	7	0					increments ~ each second	
			7	7			Climate control on			
		3	6	1			Climate control power		0.25kW per lsb	
			0	0						
		4	7	0						
		5	7	0						
		6	7	0						
		7	7	0			Appears to track outside ambient +56 (F)		0x92=90F;0x86=79F (90F & 79F read from dash), identical to EV CAN msg 54C byte 6	
54a	100ms	0	7	0						VCM relay from A/C Auto Amp to A/V unit for climate display
		1	7	0						
		2	7	0						
		3	7	0						
		4	7	0			climate control temperature setpoint			
		5	7	0						
		6	7	0						
		7	7	0			Appears to track ambient (+41)		0x83=90F;0x79=79F (90F & 79F read from dash); also some low reads at poweron	
54b	100ms	0	7	0			Climate turn on alert		used to alert A/V unit that CC being toggled on or off by the user so the A/V can display the fan and CC settings on the display 00 no change, 01 change	VCM relay from A/C Auto Amp to A/V unit for climate display
		1	7	0			Climate on or off status?		08 off, 78 on	
		2	7	0			Climate on or off status?		80 off, 88 on	
		3	7	0					00,08,09,10,12 observed, mostly 09 while CC on	
		4	7	0			User requested fan speed			
		5	7	0					00	
		6	7	0					00	
		7	7	0			Fan Speed change alert		used to alert A/V unit that fan speed is being changed by the user so the A/V can display the fan and CC settings on the display 00 no change, 01 change	
551	100ms	0	7	0						In 370Z this has engine coolant and cruse control
		1	7	0						
		2	7	0						
		3	7	0						
		4	7	0					80 with CC on , 00 off	
		5	7	0						
		6	7	0						
		7	7	0						
55a		0	7	0						Not seen in MY 2012???
		1	7	0			Cabin Temperature (F)?			
		2	7	0						
		3	7	0						
		4	7	0						
		5	7	0			Raw Temperature?			
		6	7	0						
		7	7	0			Raw Temperature?			
58A		0	4	4			Parking brake set	0:No 1:Set		Parking Brake Controller (2011-2012 only)
		0	1	1			Parking brake set request	0:No 1:Req		
		1	7	0					00	
		2	7	0					FD	
5a9	500ms	0	7	0						Probably to cluster (GOM)
		1	7	0					Seems to *somewhat* follow GIDs	
		2	7	0						
		3	7	0						
		4	7	0						
		5	7	0						
		6	7	0					00	
		7	7	0					00	
							Turbo3 notes point to GOM			
5b3	500ms	0	7	0			Looks like pack temperature at 0.25c/bit		Probably used to drive temp bars on cluster	VCM Relay and processed data to Dash (cluster) Display
		1	7	1			SOH		Confirmed to match State of Health value reported on DV-R test equipment	
			0	0						
		2	7	0						
		3	7	0						
		4	7	1						
		4	0	0						
		5	7	0			Gids			
		6	7	3	AFB		Active Fuel Bars			
			2	0						
		7	7	0					Possibly capacity bargraph when D0=FE; SOH otherwise	
5c0	500ms	0	7	0						VCM relay of LBC (BMS) from EV CAN
		1	7	0						
		2	7	0						

										Possible Controler
msgID	Time Between Msgs	Byte	Bits				Description (unofficial)	Byte Scale/Sign	Discussion	Signal name
		3	7	:	0		Ramps up during charge, negative during drive, resets after every start or charge	2's comp		
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
							This message appears to be active whenever EVCAN or CARCAN is active??			
5c5	100ms	0	7	:	0					Odo is handled by the cluster display and is transmitted to body control module, AV, and VCM
		1	7	:	0					
		2	7	:	0					
		3	7	:	0		odometer			
		4	7	:	0				00	
		5	7	:	0				0C	
		6	7	:	0				00	
		7	7	:	0				00	
5e3	500ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
5e4	100ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					
5eb	500ms	0	7	:	0					Looks like it's active only when starting a drive. Might be various bit flags to turn on warning lights in the dash cluster
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
5f8		0	7	:	0		Increments once a minute?			
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
5f9		0	7	:	0					
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	6					
			5	:	0		time:minute (0-59)		MY2013 only	
		5	7	:	3		time:hour (0-23)		MY2013 only	
			2	:	0					
		6	7	:	0					
		7	7	:	0					
5fa	500ms	0	7	:	0				MY2011,2012 only	
		1	7	:	0					
		2	7	:	3		day of month (1-31)			
			2	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	4		month (1-12)			
			3	:	0					
		6	7	:	0					
		7	7	:	0					
							Looks the same as 5f8 for bytes 0 and 1 (at least on my 2012)			
5fb	500ms	0	7	:	0				MY2011,2012 only	
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
5fc	500ms		7	:	3		time:hour (0-23)		MY2011,2012 only; tracks nav unit - GPS based?	NAV to VCM
		0	2	:	0					
			7	:	2		time:seconds (0-59)			
		1	1	:	0					
			7	:	4		time:minutes (0-59)			
		2	3	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					

										Possible Controler
msgID	Time Between Msgs	Byte	Bits				Description (unofficial)	Byte Scale/Sign	Discussion	Signal name
		6	7	:	0					
		7	7	:	0					
603	wk up	0	7	:	0		0		rare - doesn't show up in all logs	Noticing this shows up on CARcan right after 68c shows up on EVCan. Probably VCM relay from TCU.
		1	7	:	0		0			
		2	7	:	0		0			
		3	7	:	0		0			
		4	7	:	0		0			
		5	7	:	0		0			
		6	7	:	0		0			
		7	7	:	0		0			
604		0	7	:	0					
		1	7	:	0					
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
60d	100ms		7	:	7		1 - trunk is opened			In the 370z there are lock, door, and headlight statuses
			6	:	6		1 - rear right door is opened			
			5	:	5		1 - rear left door is opened			
			4	:	4		1 - Driver door is opened, 0 - closed			
			3	:	3		1 - passenger's door is opened			
			1	:	2		3 - dim lights 2 - parking lights (first mode on the control)			
		0	0	:	0					
			7	:	7		1 - high beam lights (together with 1-2 bits of the byte #0)			
			6	:	6		1 - right turn signal is active (not the control, but the actual light)			
			5	:	5		1 - left turn signal is active (not the control, but the actual light)			
			4	:	4					
			3	:	3					
			2	:	1		State of the car: 0 - OFF, 1 - power button is pressed once without brakes. 2 - is sent during the startup sequence before 1 and 3 for 2 seconds 3 - either car is in Ready On mode or the power button is pressed the second time after the mode '1'			
		1	0	:	0		1 - fog lights (together with 1-2 bits of the byte #0)			
		2	7	:	0				06: Turn signal off 26: Right 46: Left	
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
		6	7	:	0					
		7	7	:	0					
625	100ms	0	7	:	0					In 370z there are climate related statuses here
		1	7	:	0				00: Lights off 60: Headlights on 40: Parking Lights on 68: Headlights and fog lights	
		2	7	:	0					
		3	7	:	0					
		4	7	:	0					
		5	7	:	0					
682		0	7	:	0		0		rare - doesn't show up in all logs	In 370z this "Sleep wakeup" perhaps modules on the car can use this to wake up VCM
		1	7	:	0		0			
		2	7	:	0		0			
		3	7	:	0		0			
		4	7	:	0		0			
		5	7	:	0		0			
		6	7	:	0		0			
		7	7	:	0					
68c	wk up	0	7	:	0		0		rare - doesn't show up in all logs but shows up along with 603	68C on EVcan is TCU (Carwings) so it might be a relay from VCM or a log mixup
		1	7	:	0		0			
		2	7	:	0		0			
		3	7	:	0		0			
		4	7	:	0		0			
		5	7	:	0		0			
		6	7	:	0		0			
		7	7	:	0		0			
6f6	100ms	0	7	:	0					
		1	7	:	0					
		2	7	:	0					

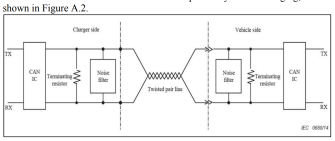
msgID	Byte	Bits	Parameter	Description (official)	Resolution (range)	Unit	Source	Destination	Data update rate
100	0	7 : 0					From EV	ChaDeMo station	100ms
	1	7 : 0							
	2	7 : 0							
	3	7 : 0							
	4	7 : 0	Maximum battery voltage	The maximum battery voltage value at the vehicle inlet terminals, at which the station stops charging to protect the vehicle battery	1V/bit	V			
	5	7 : 0							
	~~6~~	~~7 : 0~~	~~Total Battery Capacity~~		~~0.1kWh/bit~~				
	6	7 : 0	Constant of charging rate indication	Fixed value for charging rate indication which is the maximum charging rate (100%) of vehicle battery	1% bit, 100%(fixed)	%			
	7	7 : 0							
101	0	7 : 0					From EV	ChaDeMo station	100ms
	~~1~~	~~7 : 0~~	~~Max charge time~~		~~1 min/bit~~				
	1	7 : 0	Maximum charging time (ste by 10s)	Maximum charging time permited by EV, set by 10s	10s/bit (0 to 2540 s)	s			
	~~2~~	~~7 : 0~~	~~Max charge time (extended)~~		~~1 min/bit~~				
	2	7 : 0	Maximum charging time (set by minute)	Maximum charging time permited by EV, set by minute	1min/bit (0 to 255 min)	min			
	3	7 : 0	Estimatet charging time	Estimated remaining time before the end of charging calculated by EV	1min/bit (0 to 254 min)	min			
	4	7 : 0							
	5	7 : 0							
	6	7 : 0	Rated capacity of battery	Rated capacity of battery	0.11kWh/bit	kWh			
	7	7 : 0							
102	~~0~~	~~7 : 0~~	~~CHAdeMO control protocol number~~				From EV	ChaDeMo station	100ms
	0	7 : 0	Control protocol number	Software version of control protocol to which EV corresponds	1/bit (0 to 255)				
	~~1~~	~~7 : 0~~	~~Target Battery Voltage Low byte 16 bit~~		~~1V/bit~~				
	~~2~~	~~7 : 0~~	~~Target Battery Voltage High byte~~						
	1	7 : 0				V			
	2	7 : 0	Target battery voltage	Target charging voltage at the vehicle inlet terminals	1 V/bit (0 to 600V)				
	~~3~~	~~7 : 0~~	~~Charging Current Request~~		~~1 Amp/bit~~				
	3	7 : 0	Charging current request	Current value requested by EV during charging	1 A/bit (0 to 255A)	A			
	4	Fault Flags							
	4	4	Battery voltage deviation error	Status flag indicating whether or not the vehicle battery voltage deviates from the output voltage measured by the station	0: Normal 1: Fault				
	4	3	High battery temperature	Status flag indicating whether or not the temperature of vehicle battery exceeds the maximum limit	0: Normal 1: Fault				
	4	2	Battery current deviation error	Status flag indicating whether or not the output current deviates from EV requested current	0: Normal 1: Fault				
	4	1	Battery undervoltage	Status flag indicating whether or not the vehicle battery voltage is less than the lower limit specified by EV	0: Normal 1: Fault				
	4	0	Battery overvoltage	Status flag indicating whether or not the vehicle battery voltage exceeds the maximum limit specified by EV	0: Normal 1: Fault				
	5	Status Flags							
	5	4	Normal stop request before charging	Status flag indicating the request of EV to stop charging control	0: no request 1: request to stop				
	5	3	Vehicle status	Status flag indicating the EV contactor status	0: EV contactor closed or during welding detection 1: EV contactor open or welding detection finished				
	5	2	Charging system fault	Status flag indicating malfunction caused by EV or the station, and detected by EV	0: normal 1: fault				
	5	1	Vehicle shift lever position	Status flag indicating the shift lever position	0: "Parking" position 1: other position				
	5	0	Vechicle charging enabled	Status flag indicating charge permission status of EV	0: disabled 1: enabled				
	~~6~~	~~7 : 0~~	~~Remaining Battery Capacity~~		~~0.1 kWh/bit~~				
	6	7 : 0	Charging rate	Charging rate of vehicle battery	1 %/bit (0 to 100%)	%			
	7	7 : 0							
108	~~0~~	~~7 : 0~~	~~Welding Detection Flag~~		~~0: Not Support~~		From ChaDeMo station	EV	100ms
	0	7 : 0	EV contactor welding detection support identifier	Identifier indicating whether or not the station deals with EV contactor welding detection	0: Not supporting vehicle welding detection 1 or more: supporting vehicle welding detection				
	~~1~~	~~7 : 0~~	~~output voltage Max. Low byte~~		~~1V per bit~~				
	~~2~~	~~7 : 0~~	~~output voltage Max. hight byte~~						
	1	7 : 0				V			
	2	7 : 0	Available output voltage	Maximum output voltage value at the vehicle connector terminals	1 V/bit (0 to 600 V)				
	~~3~~	~~7 : 0~~	~~Avalble Output Current~~		~~1 Amp/bit~~				
	3	7 : 0	Available output current	Maximum output current value of the station	1 A/bit (o to 255 A)	A			
	~~4~~	~~7 : 0~~	~~thres.voltage low byte~~		~~1V per bit~~				
	~~5~~	~~7 : 0~~	~~thres. voltage high byte~~						
	4	7 : 0				V			
	5	7 : 0	Threshold voltage	Threshold voltage to stop the charging process in order to protect vehicle battery	1 V/bit (0 to 600 V)				
	6	7 : 0							
	7	7 : 0							
109	~~0~~	~~7 : 0~~	~~CHAdeMO control protocol number~~				From ChaDeMo station	EV	100ms
	0	7 : 0	Control protocol number	Software version number of control protocol or charging sequences that the station deal with	1 /bit (0 to 255)				
	~~1~~	~~7 : 0~~	~~Output Voltage low byte~~		~~1V per bit~~				
	~~2~~	~~7 : 0~~	~~Output Voltage high byte~~						
	1	7 : 0				V			
	2	7 : 0	Output voltage	Supply voltage value of the output circuit in the station	1 V/bit (0 to 600 V)				
	~~3~~	~~7 : 0~~	~~Output Current~~		~~1 Amp/bit~~				
	3	7 : 0	Output current	Supply current value of the output circuit in the station	1 A/bit (0 to 255 A)	A			
	4	7 : 0							
	5	Status and Fault Flags							
	5	5	Charger stop control	Status flag indicating whether or not the status proceeds with shutdown process	0: operating 1: shutdown or stop chaging				
	5	4	Charging system malfunction	Status flag indicating whether or not there is a problem with EV, such as improper connection	0: normal 1: malfunction				
	5	3	Battery inclompatibility	Status flag indicating the compatibility of vehicle battery with the output voltage of station	0: compatibile 1: incompatibile				
	5	2	Vehicle connector lock	Status flag indicating the electromagnetic lock status of the vehicle	0: unlocked 1: locked				
	5	1	Station malfunction	Status flag indicating whether or not there is a malfunction caused by the station	0: normal 1: fault				
	5	0	Station status	Status flag indicating the energy transfer from the station	0: Standby 1: charging				
	~~6~~	~~7 : 0~~	~~Remaining charge time~~		~~10 sec/bit~~				
	6	7 : 0	Remaining charging time (counted by 10s)	Remaining time before the end of charging (counted by 10 s)	10 s/bit (0 to 2540 s)	s			
	~~7~~	~~7 : 0~~	~~Remaining charge time (extended)~~		~~1 min/bit~~				
	7	7 : 0	Remaining charging time (counted by minutes)	Remaining time before the end of charging (counted by minutes)	1 min/bit (0 to 255 min)	min			

The physical/data link layer specifications are shown in Table A.3.

Table A.3 – The physical/data link layer specifications for system A

Communication system	Communication protocol	ISO 11898-1 and ISO 11898-2 The extension bit (12 – 29 bit) is not used.
	Transmission rate (kbps)	500
	Cycle	100 ms ± 10 %

The CAN-bus circuit shall be established independently for d.c. charging, as shown in Figure A.2.



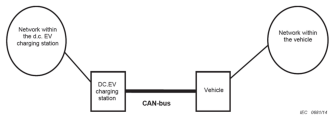


Figure A.3 – Dedicated CAN communication between vehicle and d.c. EV charging station

79b = request; 7bb = response; can be initiated from either canbus or evcan

79b	0	7:0	command size	02
	1	7:0	command?	21 (= read block command?)
	2	7:0	Group	01: ??? (6 lines) 02: cellpair data (29 lines) 03: Vmin, Max, ??? (5 lines) 04: Temperature (3 lines) 05: ??? (11 lines) 06: balancing shunts
	3	7:0	ff	
	4	7:0	ff	
	5	7:0	ff	
	6	7:0	ff	
	7	7:0	ff	
				30 01 00 ff ff ff ff ff is command to send next line (must be sent within 15ms of last 7bb recieved)
7bb	0	7:4	flags	bit 4 set on first response; bit 5 on continuation
		3:0	index	(0-f, then wraps)
	1	7:0	Data	Data response from 79b block request
	2	7:0		
	3	7:0		
	4	7:0		
	5	7:0		
	6	7:0		
	7	7:0		

index	Group1	Group2	Group3	Group4	Group5	Group6
0		D1:D3 - ? D4:D5 - cp 1 D6:D7 - cp 2		D4:D5 - raw temp1 D6 - temp1 (C) D7 - raw temp2		
1		D1:D2 - cp3 D3:D4 - cp4 D5:D6 - cp5 D7 - 1/2 cp6		D1 - raw temp2 D2 - temp2 (C) D3:D4 - raw temp3 D5 - temp3 (C) D6:D7 - raw temp4		Shunt information in lower nibble of each byte?
2		D1 - 1/2 cp6 D2:D3 - cp7 D4:D6 - cp8 D6:D7 - cp9		D1 - temp4 (C)		
3	D3:D4 : Acc V / 1024	D1:D2 - cp10 D3:D4 - cp11 D5:D6 - cp12 D7 - 1/2 cp13		NA		
4	D2:D3 : Hfactor*100 (%) D5:D7 : SOC*10000 (%)	D1 - 1/2 cp13 D2:D3 - cp14 D4:D6 - cp15 D6:D7 - cp16				NA
5	D2:D4 : Capacity*10000 (Ah)					
6						
7						
8						
9						
0						
11						
12						
13						
14						
15						
16		and so on...				
17						
18	NA		NA			
19						
20						
21					NA	
22						
23						
24						
25						
26						
27		D1:D2 - cp94 D3:D4 - cp95 D5:D6 - cp96 D7 - ?				
28		?				

* the Hfactor in D2:D3 of group 1 does not track battery capacity SOH but it does decay with age

797 = request; 79a = response; carcan only

797	0	7:0	command size	03
	1	7:0	command?	22 (= read block command?)
	2	7:0	Group?	11: ambient+cabin temp
	3	7:0	???	5d
	4	7:0	ff	
	5	7:0	ff	
	6	7:0	ff	
	7	7:0	ff	
79a	0	7:0	response size	7
	1	7:0		62
	2	7:0	Identifier	11
	3	7:0		5d
	4	7:0		
	5	7:0	data	
	6	7:0		
	7	7:0		00

index	Group 11
7	D5 = ambient(F)+41; D4&D6 = cabin temp?(F)+41

797 = request; 79a = response; carcan only

792	0	7:0	command size	03
	1	7:0	command?	22 (= read block command?)
	2	7:0	Group?	12
	3	7:0	???	10,30
	4	7:0	ff	
	5	7:0	ff	
	6	7:0	ff	
	7	7:0	ff	
793	0	7:0		??
	1	7:0		??
	2	7:0		12
	3	7:0		10,30
	4	7:0	Amp*16 for 10 or	
	5	7:0	Volts*128 for 30	
	6	7:0		
	7	7:0		

Msg ID	Len	Byte1	Byte2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Notes
2	5	Steering Angle LSB: MSB Left is negative Degrees = value/10 (3600 = 360.0 deg)		Rate of steering angle change, unsigned						
02A	3									
130	3		bit5: traction control status 0 = normal 1 = Traction control off							
174	8									
176	7	Speed? RPM? (2 byte)			0xAA Park or Neutral 0xBB Drive 0x99 Reverse					
180	8			Torque,power,current MSB	upper nibble is LSN of byte 3 and lower nibble is MSN of byte 5	Seems to follow byte 3	Throttle Pos Range 0 to 199d			Byte 3:5 seem related to torque but it drops off as speed increases
1CA	8	Brake pressure (Corner?)	Brake pressure (Corner?)	Brake pressure (Corner?)	Brake pressure (Corner?)					Values in 1:4 are always equal to each other, possibly one byte for each wheel?
1CB	7	Bytes 1:3 Active during regen								
1D5	5									
1F9	8									
215	6									
216	2		Bit 2 = parking pawl?							
245	8									
260	4									
280	8	0x03 Drivers Seat belt off 0x01 Drivers Seat belt on				Speed? RPM?				
284	8									
285	8									
292	8									
2DE	8									
300	1	Steering force applied to wheel								
351	8									
354	8									
355	7	Speed related		eco tree circle						Something in here handles the eco tree
358	8			0x84 Right turn signal 0x82 Left turn signal 0x80 no turn signal						
35D	8									
385	7									
421	3	Controls PRNDL display on dash 0x18 = Neutral 0x08 = Park 0x20 = Drive 0x10 = Reverse 0x38 = ECO								Changing byte 1 also triggers VPS
50A	6									
50D	8									

510	8									
54A	8									Lots of climate control stuff
54B	8									Lots of climate control stuff
551	8									
58A	3	Bit4: Parking brake status 0 = not set 1 = set	Bit1: Parking Brake Set Request 0 = Parking Brake not requested 1 = Parking brake set requested							0x0600 = Parking brake released 0x0602 = Parking brake requested, but not set 0x1602 = Parking brake set
5A9	8	Range change if climate control	Range MSB FFF is 508mi	Upper nibble is LSN of byte 2 LSN is always zero						Proven that byte 3:4 is a high resolution range used for display I have reason to believe the climate control correction value is also in this message
5B3	8							SOC Bargraph		
5C0	8									
5C5	8									
5E3	4	All 4 bytes seem to be related to range (change with eco or HVAC)								Tested and plotted extensively, but could not find anything that could represent range
5E4	3									
5EB	8									
5F8	8									
5F9	8									
5FA	7									
5FB	7									
5FC	7									
604	5									This might be a control message. It did not show up when connected to the car, while charging witht he car on but not in driving mode (turn on without the brake)
60D	8		0x06 Turnsignal light off 0x26 Left turn signal light on 0x46 Right turn signal light on							
625	6		0x00 Lights off 0x60 Headlights on 0x40 Parking lights on 0x68 Headlights and fogs							
6F6	3									

PID	From	To	Interval	Byte	Description	Description	Notes
2	STRG	ABS	10ms	A	Steering Wheel Angle	Low byte	Degrees = if BA>32,767 then -(65535-BA/10) else BA/10
				B	Steering Wheel Angle	High byte	
				C		Angular velocity of steering wheel?	
				D		Always 7 (00000111)	
				E		Permutation of 16 numbers, not always the same, so each may represent a different piece of data	
160			10ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
180	ECM		10ms	A	Engine RPM	High byte	Divide by 10 for actual RPM
				B	Engine RPM	Low byte	
				C			
				D			
				E			
				F	Gas Pedal Position		
				G			
				H			
182	ECM	TCM	10ms	A			
				B			
					Closed Throttle Position	0: open, 1: closed	
				C			
				D			
				E	Throttle Position	Independent of gas pedal because S-mode/cruise control can control it	
				F			
				G		First 4 bits are higher nibble of H	
					Brake Light	0: off, 1: on	
				H		Relate to throttle position, low byte, includes lowest for bits of G	
1F9	ECM		10ms	A			
				B			
				C	Engine RPM	High byte	Divide by 10 for actual RPM
				D	Engine RPM	Low byte	
				E			
				F			
				G			
				H			
215			20ms	A			
				B			
					A/C Compressor	0: off, 1: on	
					Air Conditioning	0: off, 1: on	
				C			
				D			
				E			
				F			

PID	From	To	Interval	Byte	Description	Description	Notes
216			20ms	A	Ignition Button Status	0: released, 1: depressed	
					Ignition ON Status	0: OFF/ACC, 1: ON	
				B			
					Clutch Pedal	0: released, 1: fully pressed	
						0: ign ACC/OFF, 1: ign ON	
245			20ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
				H			
280			20ms	A	Driver Seatbelt	0: on, 1: off	
						goes off when car turns off (maybe only monitors passenger when car is on?)	
				B			
				C			
				D			
				E	Vehicle Speed	High byte	Divide by 160.934 for MPH
				F	Vehicle Speed	Low byte	
				G			
				H			
284			20ms	A	Front Right Wheel Speed	High byte	Divide by 160.934 *2 for MPH
				B	Front Right Wheel Speed	Low byte	
				C	Front Left Wheel Speed	High byte	Divide by 160.934 *2 for MPH
				D	Front Left Wheel Speed	Low byte	
				E	Vehicle Speed	High byte	Divide by 160.934 for MPH
				F	Vehicle Speed	Low byte	
				G			
				H			
285			20ms	A	Rear Right Wheel Speed	High byte	Divide by 160.934 *2 for MPH
				B	Rear Right Wheel Speed	Low byte	
				C	Rear Left Wheel Speed	High byte	Divide by 160.934 *2 for MPH
				D	Rear Left Wheel Speed	Low byte	
				E			
				F			
				G			
				H			
292			20ms	A		Always 255	
				B			
				C			
				D		Battery voltage? D/10 = ~12.8 while running	
				E			
				F		Always 254	
				G	Brake Pedal Position		
				H		Always 0	

PID	From	To	Interval	Byte	Description	Description	Notes
2DE			10ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
				H			
342			Only at 1.803s 1.847s	A		Always 03h	This is probably key authentication
				B		Always 23h, then 2Ch	It is only performed when taking car to ON position
				C		Different each time, then always FFh	512 sends challenge, 342 sends response, 512 Acks, 342 Acks
				D		Different each time, then always FFh	
351			110ms	A			
				B			
				C		0C, 0B from key on to key off	
				D			
				E			
				F			
				G			
				H			
						on when key is on, off when key is off	
					Clutch Pedal	0: released, 1: fully pressed	
354	ABS	M&A	45ms	A	Vehicle Speed	High byte	Divide by 160.934 for MPH
				B	Vehicle Speed	Low byte	
				C			
				D			
				E			
							Must contain the following:
							Vehicle speed
					VDC Status	0: off, 1: on	ABS warning lamp
							Brake warning lamp
				F			VDC OFF indicator lamp
				G			VDC warning lamp
					Brake Pedal		
				H			
355			45ms	A	Vehicle Speed	High byte	These two vehicle speeds are off by a little bit from each other
				B	Vehicle Speed	Low byte	Maybe different wheel speeds? Left to right or front to back?
				C	Vehicle Speed	High byte	
				D	Vehicle Speed	Low byte, turns to FF when car goes off	Divide by 160.934 for MPH
				E			
					Display Units	0: metric, 1: english	

PID	From	To	Interval	Byte	Description	Description	Notes
				F			
				G			
						Nissan Leaf odometer units: 0: metric, 1: english (no way to change on 370Z, but is set at 1=english)	
358			110ms	A		goes to 02 briefly after going to ACC from OFF	
				B			
					Headlights	0: off, 1: on	Only proven for auto mode
				C			
				D		ign ON: 20, ign ACC/OFF: 00	
				E		80 while button pressed after turning car on, or something else happening for a brief period	
				F			
				G			
				H			
35D			110ms	A		ign ON: 80, ign OFF/ACC: 00	
				B		On as soon as the car is woken up, then turns off before a brief period before car goes to sleep	
						On as soon as the car is woken up, then turns off before a brief period before car goes to sleep	
				C			
					Wipers Fast	0: not fast, 1: fast	
					Wipers On	0: off, 1: on	
					Wipers Continuous	0: intermittent, 1: continuous (holding stick up or in slow/fast mode)	
				D			
				E			
					Brake Pedal	0: off, 1: on	
					Car Moving Forward	0: stopped/reverse, 1: moving forward	
				F			
				G			
				H			
385			110ms	A			
				B			

PID	From	To	Interval	Byte	Description	Description	Notes
				C		Tire pressure in percent	
				D		Tire pressure in percent	
				E		Tire pressure in percent	
				F		Tire pressure in percent	
				G		Possibly valid bits for tire pressure readings	
421	TCM	ABS	55ms	A	Shifter Position	16: R, 24: N, 128: 1, 136: 2, 144: 3, 152: 4, 160: 5, 168: 6	Shift Position
				B		on as soon as car is ON	
					S-Mode Status	0: off, 1: on	
							Current Gear Position
512			Only at 1.789s 1.834s	A		Always 03h	This is probably key authentication
				B		Always 20h, then 2Ch	It is only performed when taking car to ON position
				C		Different each time, then always FFh	512 sends challenge, 342 sends response, 512 Acks, 342 Acks
				D		Different each time, then always FFh	
54C			110ms	A		Possibly a temperature	
				B			
				C			
				D			
				E			
				F			
				G			
				H			
551	ECM	M&A	110ms	A	Engine Coolant Temperature	Stabilizes at ~125	Must contain the following:
				B		Possibly engine revolutions counter (0 to 255, then rollover)	ASCD (Automatic Speed Control Device) status
				C			Engine coolant temperature
				D		A0: ign ON, 20: ign OFF/ACC	Engine speed
				E	Cruise Control Speed	255: CC master off, 254: CC master on/inactive, all others: speed in kmh (divide by 1.60934 for mph)	Engine status
				F		Only on for ~.65s after ~2.2s of car being turned on	Fuel consumption monitor
						Comes on with F0 and then stays on	Fuel filler cap warning display
							Malfunctioning indicator lamp
							Oil temperature
					Cruise Control Active	0: active, 1: master on/inactive	Shift position
					Cruise Control Master	0: off, 1: on	
				G			
				H			
580			110ms	A			
				B			
				C			
				D			
				E			
				F			
				G			

PID	From	To	Interval	Byte	Description	Description	Notes
				H			
5C5	M&A	BCM	110ms	A		80 twice, 40 during ACC, 44 during ON	Must contain the following:
							Odometer
					Parking Brake	when key in on position: 0: parking brake off, 1: parking brake on. Also goes from 1 to 0 when key goes from on to off	Parking Brake Switch
							Seat Belt Buckle Switch
							Sleep-ready
							Vehicle Speed
							Wake Up
				B	Odometer Reading	High byte	
				C	Odometer Reading	Middle byte	
				D	Odometer Reading	Low byte	
				E	S-Mode Button Status	0: released, 1: depressed	
				F			
				G			
				H			
60D	BCM	M&A	110ms	A			Must contain the following:
					Headlights	0: off, 1: on	Buzzer output
					Running Lights	0: off, 1: on	Door switch
					Driver Door	0: closed, 1: open	High beam request
					Passenger Door	0: closed, 1: open	Key warning lamp
						Probably used for cars with back doors	Low tire pressure warning lamp
						Probably used for cars with back doors	Meter display
					Trunk Open	0: closed, 1: open	Oil pressure switch
				B			Position light request
					Ignition ACC		Rear fog lamp status
					Ignition ON		Sleep wake up
					High Beams	0: off, 1: on	Starter relay status
							TPMS (Tire Pressure Monitoring System) malfunction warning lamp
					Left Turn Signal	0: off, 1: on	Turn indicator
					Right Turn Signal	0: off, 1: on	
				C			
					Passenger Door Lock	0: unlocked, 1: locked	
					Driver Door Lock	0: unlocked, 1: locked	
				D		00h when OFF & ACC, 2Ah when key goes to ON	
				E			
				F			
				G			
				H			
625	BCM	IPDM E/R	110ms	A	Rear Defrost	0: off, 1: on	Must contain the following:
							Day time running light request
							Door switch
							Front wiper request
							High beam request

PID	From	To	Interval	Byte	Description	Description	Notes
							Horn reminder
							Ignition switch ON
							Interlock/PNP (Park/Neutral Position) switch
				B			Low beam request
					Wipers Position	0: Moving across the window, 1: Home position	Position light request
					Wipers Slow	0: off, 1: on	Rear window defogger control
					Wipers Fast	0: off, 1: on	Sleep wake up
					High Beams	0: off, 1: on	Starter control relay
					Headlights	0: off, 1: on	Starter relay status
					Running Lights	0: off, 1: on	Theft warning horn request
					Air Conditioning	0: off, 1: on	
				C			
				D		9D: ON, 0D: OFF/ACC	
				E		00: for one time, then 20 after that	
				F			
682			Only at 0s	A	Sleep wake up	Always 0	
600			110ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
				H			

PID	From	To	Interval	Byte	Description	Description	Notes
002	STRG	ABS	10ms	A	Steering Wheel Angle	Low byte	Degrees = if BA>32,767 then -(65535-BA/10) else BA/10
				B	Steering Wheel Angle	High byte	
				C		Angular velocity of steering wheel?	
				D		Always 7 (00000111)	
				E		Permutation of 16 numbers, not always the same, so each may represent a different piece of data	
160			10ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
180	ECM		10ms	A	Engine RPM	High byte	Divide by 10 for actual RPM
				B	Engine RPM	Low byte	
				C			
				D			
				E			
				F	Gas Pedal Position		
				G			
				H			
182	ECM	TCM	10ms	A			
				B			
					Closed Throttle Position	0: open, 1: closed	
				C			
				D			
				E	Throttle Position	Independent of gas pedal because S-mode/cruise control can control it	
				F			
				G		First 4 bits are higher nibble of H	
					Brake Light	0: off, 1: on	
				H		Relate to throttle position, low byte, includes lowest for bits of G	
1F9	ECM		10ms	A			
				B			
				C	Engine RPM	High byte	Divide by 10 for actual RPM
				D	Engine RPM	Low byte	
				E			
				F			
				G			
				H			
215			20ms	A			
				B			
					A/C Compressor	0: off, 1: on	
					Air Conditioning	0: off, 1: on	
				C			
				D			
				E			
				F			
216			20ms	A			
					Ignition Button Status	0: released, 1: depressed	
					Ignition ON Status	0: OFF/ACC, 1: ON	
				B			
					Clutch Pedal	0: released, 1: fully pressed	
						0: ign ACC/OFF, 1: ign ON	
245			20ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
				H			
280			20ms	A	Driver Seatbelt	0: on, 1: off	
						goes off when car turns off (maybe only monitors passenger when car is on?)	
				B			
				C			
				D			
				E	Vehicle Speed	High byte	Divide by 160.934 for MPH
				F	Vehicle Speed	Low byte	
				G			
				H			
284			20ms	A	Front Right Wheel Speed	High byte	Divide by 160.934*2 for MPH
				B	Front Right Wheel Speed	Low byte	
				C	Front Left Wheel Speed	High byte	Divide by 160.934*2 for MPH
				D	Front Left Wheel Speed	Low byte	
				E	Vehicle Speed	High byte	Divide by 160.934 for MPH
				F	Vehicle Speed	Low byte	
				G			
				H			
285			20ms	A	Rear Right Wheel Speed	High byte	Divide by 160.934*2 for MPH
				B	Rear Right Wheel Speed	Low byte	
				C	Rear Left Wheel Speed	High byte	Divide by 160.934*2 for MPH
				D	Rear Left Wheel Speed	Low byte	
				E			
				F			
				G			
				H			
292			20ms	A		Always 255	
				B			
				C			
				D		Battery voltage? D/10 = ~12.8 while running	

PID	From	To	Interval	Byte	Description	Description	Notes
				E			
				F		Always 254	
				G	Brake Pedal Position		
				H		Always 0	
2DE			10ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
				H			
342			Only at 1.803 s 1.847s	A		Always 03h	This is probably key authentication
				B		Always 23h, then 2Ch	It is only performed when taking car to ON position
				C		Different each time, then always FFh	512 sends challenge, 342 sends response, 512 Acks, 342 Acks
				D		Different each time, then always FFh	
351			110ms	A			
				B			
				C		0C, 0B from key on to key off	
				D			
				E			
				F			
				G			
				H			
						on when key is on, off when key is off	
					Clutch Pedal	0: released, 1: fully pressed	
354	ABS	M&A	45ms	A	Vehicle Speed	High byte	Divide by 160.934 for MPH
				B	Vehicle Speed	Low byte	
				C			
				D			
				E			
							Must contain the following:
							Vehicle speed
					VDC Status	0: off, 1: on	ABS warning lamp
							Brake warning lamp
				F			VDC OFF indicator lamp
				G			VDC warning lamp
					Brake Pedal		
				H			
355			45ms	A	Vehicle Speed	High byte	These two vehicle speeds are off by a little bit from each other
				B	Vehicle Speed	Low byte	Maybe different wheel speeds? Left to right or front to back?
				C	Vehicle Speed	High byte	
				D	Vehicle Speed	Low byte, turns to FF when car goes off	Divide by 160.934 for MPH
				E			
					Display Units	0: metric, 1: english	
				F			
				G			
						Nissan Leaf odometer units: 0: metric, 1: english (no way to change on 370Z, but is set at 1=english)	
358			110ms	A		goes to 02 briefly after going to ACC from OFF	
				B			
					Headlights	0: off, 1: on	Only proven for auto mode
				C			
				D		ign ON: 20, ign ACC/OFF: 00	
				E		80 while button pressed after turning car on, or something else happening for a brief period	
				F			
				G			
				H			
35D			110ms	A		ign ON: 80, ign OFF/ACC: 00	
				B		On as soon as the car is woken up, then turns off before a brief period before car goes to sleep	
						On as soon as the car is woken up, then turns off before a brief period before car goes to sleep	
				C			
					Wipers Fast	0: not fast, 1: fast	
					Wipers On	0: off, 1: on	
					Wipers Continuous	0: intermittent, 1: continuous (holding stick up or in slow/fast mode)	
				D			
				E			
					Brake Pedal	0: off, 1: on	
					Car Moving Forward	0: stopped/reverse, 1: moving forward	
				F			
				G			
				H			
385			110ms	A			
				B			
				C		Tire pressure in percent	
				D		Tire pressure in percent	
				E		Tire pressure in percent	

PID	From	To	Interval	Byte	Description	Description	Notes
				F		Tire pressure in percent	
				G		Possibly valid bits for tire pressure readings	
421	TCM	ABS	55ms	A	Shifter Position	16: R, 24: N, 128: 1, 136: 2, 144: 3, 152: 4, 160: 5, 168: 6	Shift Position
				B		on as soon as car is ON	
					S-Mode Status	0: off, 1: on	
							Current Gear Position
512			Only at 1.789 s 1.834s	A		Always 03h	This is probably key authentication
				B		Always 20h, then 2Ch	It is only performed when taking car to ON position
				C		Different each time, then always FFh	512 sends challenge, 342 sends response, 512 Acks, 342 Acks
				D		Different each time, then always FFh	
54C			110ms	A		Possibly a temperature	
				B			
				C			
				D			
				E			
				F			
				G			
				H			
551	ECM	M&A	110ms	A	Engine Coolant Temperature	Stabilizes at ~125	Must contain the following:
				B		Possibly engine revolutions counter (0 to 255, then rollover)	ASCD (Automatic Speed Control Device) status
				C			Engine coolant temperature
				D		A0: ign ON, 20: ign OFF/ACC	Engine speed
				E	Cruise Control Speed	255: CC master off, 254: CC master on/inactive, all others: speed in kmh (divide by 1.60934 for mph)	Engine status
				F		Only on for ~.65s after ~2.2s of car being turned on	Fuel consumption monitor
						Comes on with F0 and then stays on	Fuel filler cap warning display
							Malfunctioning indicator lamp
							Oil temperature
					Cruise Control Active	0: active, 1: master on/inactive	Shift position
					Cruise Control Master	0: off, 1: on	
				G			
				H			
580			110ms	A			
				B			
				C			
				D			
				E			
				F			
				G			
				H			
5C5	M&A	BCM	110ms	A		80 twice, 40 during ACC, 44 during ON	Must contain the following:
							Odometer
					Parking Brake	when key in on position: 0: parking brake off, 1: parking brake on. Also goes from 1 to 0 when key goes from on to off	Parking Brake Switch
							Seat Belt Buckle Switch
							Sleep-ready
							Vehicle Speed
							Wake Up
				B	Odometer Reading	High byte	
				C	Odometer Reading	Middle byte	
				D	Odometer Reading	Low byte	
				E	S-Mode Button Status	0: released, 1: depressed	
				F			
				G			
				H			
60D	BCM	M&A	110ms	A			Must contain the following:
					Headlights	0: off, 1: on	Buzzer output
					Running Lights	0: off, 1: on	Door switch
					Driver Door	0: closed, 1: open	High beam request
					Passenger Door	0: closed, 1: open	Key warning lamp
						Probably used for cars with back doors	Low tire pressure warning lamp
						Probably used for cars with back doors	Meter display
					Trunk Open	0: closed, 1: open	Oil pressure switch
				B			Position light request
					Ignition ACC		Rear fog lamp status
					Ignition ON		Sleep wake up
					High Beams	0: off, 1: on	Starter relay status
							TPMS (Tire Pressure Monitoring System) malfunction warning lamp
					Left Turn Signal	0: off, 1: on	Turn indicator
					Right Turn Signal	0: off, 1: on	
				C			
					Passenger Door Lock	0: unlocked, 1: locked	
					Driver Door Lock	0: unlocked, 1: locked	
				D		00h when OFF & ACC, 2Ah when key goes to ON	
				E			
				F			
				G			
				H			
625	BCM	IPDM E/R	110ms	A	Rear Defrost	0: off, 1: on	Must contain the following:
							Day time running light request
							Door switch
							Front wiper request
							High beam request
							Horn reminder
							Ignition switch ON
							Interlock/PNP (Park/Neutral Position) switch
				B			Low beam request
					Wipers Position	0: Moving across the window, 1: Home position	Position light request
					Wipers Slow	0: off, 1: on	Rear window defogger control
					Wipers Fast	0: off, 1: on	Sleep wake up
					High Beams	0: off, 1: on	Starter control relay
					Headlights	0: off, 1: on	Starter relay status
					Running Lights	0: off, 1: on	Theft warning horn request
					Air Conditioning	0: off, 1: on	
				C			
				D		9D: ON, 0D: OFF/ACC	
				E		00: for one time, then 20 after that	
				F			
682			Only at 0s	A	Sleep wake up	Always 0	
6E2			110ms	A			
				B			
				C			
				D			

PID	From	To	Interval	Byte	Description	Description	Notes
				E			
				F			
				G			
				H			

[1] Message not visible in 2013SV