MOVE CAN interface V 0.97

ID	Name	CAN Controller	Message Frequency [Hz]	Message length [bytes]	Sender	Signal Name	Abbreviation	Startbit	Signal Length	Data type (0=unsigned, 1=signed)	Bit layout (Intel/Motorola)	Byte 0 (7 6 5 4 3 2 1 0)	Byte 1 (15 14 13 12 11 10 9 8)	Byte 2 (23 22 21 20 19 18 17 16)	Byte 3 (31 30 29 28 27 26 25 24)	Byte 4 (39 38 37 36 35 34 33 32)	Byte 5 (47 46 45 44 43 42 41 40)	Byte 6 (55 54 53 52 51 50 49 48)	Byte 7 (63 62 61 60 59 58 57 56)	Physical Unit	Resolution	Offset	nr of Steps	max value	min value	Remarks
Outputs MOVE																										
0x100	MOVE state	4	25	8	MOVE	MOVE State	MOVEState	0	8	0	I	7 6 5 4 3 2 1 0								-	1	0	256	256	0	State of the MOVE stystem
						Error Code	ErrorCode	8	16	0	I		7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8						-	1	0	65536	65536	0	Error Code
						Software revision	SoftwareRevision	24	8	0	I				7 6 5 4 3 2 1 0					-	0,1	0	256	25,6	0	Software revision number
						Not used		32	32	0	I															
0x102	MOVE state debug	4	25	8	MOVE	MOVE master state	MOVEMasterState	0	8	0	I	7 6 5 4 3 2 1 0								-	1	0	256	256	0	Master State of the MOVE system
						CPU load	CPULoad	8	6	0	I		5 4 3 2 1 0							%	2	0	64	128	0	
						Estimated vehicle mass	m_est	14	10	0	I		1 0	9 8 7 6 5 4 3 2						kg	1	1000	1024	2024	1000	Vehicle mass, ***offset 1000 kg***
						Slope	Slope	24	8	1	I				9 8 7 6 5 4 3 2					rad	0,002	0	256	0,256	-0,256	Slope. Incline is positive, descent is negative
						Not used		32	26	0	I															
0x103	MOVE Longitudinal state	4	25	8	MOVE	Longitudinal control state	ControlStateLon	0	4	0	I									-	1	0	16	16	0	0 = Not ready 1 = Control allowed 2 = Control active 3 = Fatal error
						Current longitudinal control mode	ControlModeLon	4	4	0	I	3 2 1 0								-	1	0	16	16	0	0 = Controller off 1 = Force Control 2 = Acceleration control 3 = Velocity control 4 = Time headway control 5 = Full stop control 10 = ACC control
						Current BrakeMode	BrakeMode	8	2	0	I			1 0						-	1	0	4	4	0	0 = CC, 1 = ACC, 2 = Precrash
						Max. longitudinal setpoint reached	MaxSetpReachedLon	10	2	0	I				1 0					-	1	0	4	4	0	0 = Setpoint value is ok, 1 = Setpoint value is too high
						Min. longitudinal setpoint reached	MinSetpReachedLon	12	2	0	I		1 0							-	1	0	4	4	0	0 = Setpoint value is ok, 1 = Setpoint value is too low
						Thottle overrule	ThrottleOverrule	14	2	0	I		1 0							-	1	0	4	4	0	Driver requests higher throttle setpoint than external platform
						Brake overrule	BrakeOverrule	16	2	0	I				1 0					-	1	0	4	4	0	Driver requests higher brake setpoint than external platform
						Not used		18	46	0	I															
0x106	MOVE Lateral state	4	25	8	MOVE	Lateral control state	ControlStateLat	0	4	0	I									-	1	0	16	16	0	0 = Not ready 1 = Control allowed 2 = Control active 3 = Overrule
						Current lateral control mode	ControlModeLat	4	4	0	I	3 2 1 0								-	1	0	16	16	0	0 = Controller off 1 = Steering torque [Nm] 2 = Steering wheel angle 3 = Yawrate 10 = Steering torque [%]
						Max. lateral setpoint reached	MaxSetpReachedLat	8	2	0	I							1 0		-	1	0	4	4	0	0 = Setpoint value is ok, 1 = Setpoint value is too high
						Min. lateral setpoint reached	MinSetpReachedLat	10	2	0	I							1 0		-	1	0	4	4	0	0 = Setpoint value is ok, 1 = Setpoint value is too low
						Steering overrule	SteeringOverrule	12	2	0	I		1 0							-	1	0	4	4	0	Driver requests higher steering torque setpoint than external platform
						Max. steering rate reached	MaxSteeringRateReached	14	2																	
						Max. yawrate reached	MaxYawRateReached	16	2																	
						SteeringMode	SteeringMode	18	2																	
						Not used		20	44	0	I															
0x110	Vehicle state	4	25	8	MOVE	Throttle pedal position	pct_trottle	0	12	0	I	7 6 5 4 3 2 1 0								%	0,1	0	4096	409,6	0	0 = not pressed, 100 = fully pressed
						Brake pressed	BrakePressed	12	12	0	I		3 2 1 0	11 10 9 8 7 6 5 4						%	0,1	0	4096	409,6	0	0 = not pressed, 100 = fully pressed
						Light Status	Light_status	24	4	0	I				3 2 1 0					-	1	0	16	16	0	0 = off, 1 = city lights, 2 = low beam, 3 = low beam + fog lights, 4 = high beam
						Gear	Gear	28	4	0	I				3 2 1 0					-	1	0	16	16	0	0 = Park, 1 = Reverse, 2 = Neutral, 3 = Drive, 4 = Motor Brake
						Not used		32	2	0	I															
						Current drive force	Fdrive	34	16	1	I					7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8			-	1	0	65536	32768	-32768	Current force generated by the drivetrain
						User requested steering torque	UserSteeringTorque	50	16	1	I							7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8	Nm	0,1	0	65536	3276,8	-3276,8	Measured torque requested by the driver
0x120	Vehicle motion 1	4	25	8	MOVE	Velocity longitudinal	vx	0	16	1	I	7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8							m/s	0,01	0	65536	327,68	-327,68	Vehicle speed
						Acceleration longitudinal	ax	16	12	1	I			7 6 5 4 3 2 1 0	11 10 9 8					m/s^2	0,01	0	4096	20,48	-20,48	
						Acceleration lateral	ay	28	12	1	I				3 2 1 0	11 10 9 8 7 6 5 4				m/s^2	0,01	0	4096	20,48	-20,48	Positve number means acceleration to left side
						Yawrate	psiD	40	12	1	I						7 6 5 4 3 2 1 0	11 10 9 8		rad/sec	0,002	0	4096	4,096	-4,096	Positve number means rotation to the left
						Steering angle	delta	52	12	1	I							3 2 1 0	11 10 9 8 7 6 5 4	rad	0,01	0	4096	20,48	-20,48	Positve number means steering left
0x121	Vehicle motion 2	4	25	8	MOVE	Wheelspeed Front-Left	vx_wheel_FL	0	16	1	I	7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8							m/s	0,01	0	65536	327,68	-327,68	Wheelspeed Front Left
						Wheelspeed Front-Right	vx_wheel_FR	16	16	1	I			7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8					m/s	0,01	0	65536	327,68	-327,68	Wheelspeed Front Right
						Wheelspeed Rear-Left	vx_wheel_RL	32	16	1	I					7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8			m/s	0,01	0	65536	327,68	-327,68	Wheelspeed Rear Right
						Wheelspeed Rear-Right	vx_wheel_RR	48	16	1	I							7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8	m/s	0,01	0	65536	327,68	-327,68	Wheelspeed Rear Left
0x130	Vehicle HMI inputs	4	25	8	MOVE	Mode button	ModeBtn	0	1	0	I	0								-	1	0	2	2	0	0 = Mode button released, 1 = Mode button pressed
						Headway mode button	HwModeBtn	1	1	0	I	0								-	1	0	2	2	0	0 = Headway Mode button released, 1 = Headway Mode button pressed
						Set / Minus button	SetMinBtn	2	1	0	I	0								-	1	0	2	2	0	0 = Set / Minus button released, 1 = Set / Minus button pressed
						Resume / Plus button	ResPlusBtn	3	1	0	I	0								-	1	0	2	2	0	0 = Resume / Plus button released, 1 = Resume / Plus button pressed
						Cancel button	CancelBtn	4	1	0	I	0								-	1	0	2	2	0	0 = Cancel button released, 1 = Cancel button pressed
						On / Off button	OnOffBtn	5	1	0	I	0								-	1	0	2	2	0	0 = On/Off button released, 1 = On/Off button pressed
						Emergency button	EmergencyBtn	6	1	0	I	0								-	1	0	2	2	0	0 = Emergency button released, 1 = Emergency button pressed
						Not used		7	57	0	I															
0x131	MOVE HMI inputs	4	25	8	MOVE	Right button		0	1	0	I	0														
						Left button		1	1	0	I	0														
						Up button		2	1	0	I	0														
						Down button		3	1	0	I	0														
						Cancel button		4	1	0	I	0														
						Ok button		5	1	0	I	0														
						Emergency button		6	1	0	I	0														
						Not used		7	63	0	I															
0x140	MIO data	4	25	8	MOVE	X position MIO	x_MIO	0	16	0	I	7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8							m	0,01	0	65536	655,36	0	
						Y position MIO	y_MIO	16	12	1	I			7 6 5 4 3 2 1 0	11 10 9 8					m	0,01	0	4096	20,48	-20,48	Positive means object left from center axle
						Rangerate MIO	rangerate_MIO	28	16	1	I				3 2 1 0	11 10 9 8 7 6 5 4	15 14 13 12			m/s	0,01	0	65536	327,68	-327,68	If negative, object is approching
						Acceleration MIO	a_MIO	44	12	1	I					3 2 1 0	11 10 9 8 7 6 5 4			m/s^2	0,01	0	4096	20,48	-20,48	Absolute acceleration
						ID MIO	ID_MIO	56	6	0	I							5 4 3 2 1 0		-	1	0	64	64	0	Identification number of the Most Import Object
						MIO detected	Detected_MIO	62	2	0	I								1 0	-	1	0	4	4	0	0 = no MIO, 1 = MIO detected
0x141 tm 0x148	Radar object data n=[1-8]	4	25	8	MOVE	X position object n	x_targetn	0	16	0	I	7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8							m	0,01	0	65536	655,36	0	
						Y position object n	y_targetn	16	12	1	I			7 6 5 4 3 2 1 0	11 10 9 8					m	0,01	0	4096	20,48	-20,48	Positive means object left from center axle
						Rangerate object n	rangerate_targetn	28	16	1	I				3 2 1 0	11 10 9 8 7 6 5 4	15 14 13 12			m/s	0,01	0	65536	327,68	-327,68	If negative, object is approching
						Acceleration object n	a_targetn	44	12	1	I					3 2 1 0	11 10 9 8 7 6 5 4			m/s^2	0,01	0	4096	20,48	-20,48	Absolute acceleration
						ID object n	ID_targetn	56	6	0	I							5 4 3 2 1 0		-	1	0	64	64	0	Identification number of object n
						Object n detected	Detected_targetn	62	2	0	I								1 0	-	1	0	4	4	0	0 = no object n, 1 = object n detected
0x150	GPS 1		25		MOVE	UTM position easting	east_gps	0	32	0	I	7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8	23 22 21 20 19 18 17 16	31 30 29 28 27 26 25 24					m	0,01	0	4E+09	4E+07	0	
						UTM position northing	nord_gps	32	32	0	I					7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8	23 22 21 20 19 18 17 16	31 30 29 28 27 26 25 24	m	0,01	0	4E+09	4E+07	0	
0x151	GPS 2	5	25	8	MOVE	UTM heading	psi_gps	0	12	0	I	7 6 5 4 3 2 1 0	11 10 9 8							rad	0,002	0	4096	8,192	0	Positive means turning to the right
						UTM velocity	v_gps	12	12	0	I		3 2 1 0	11 10 9 8 7 6 5 4						m/s	0,01	0	4096	40,96	0	
						GPS time	t_epoch_gps	24	32	0	I				7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8	23 22 21 20 19 18 17 16	31 30 29 28 27 26 25 24		s	1	0	4E+09	4E+09	0	Epoch time. Reference 1 January 1970
						Not used		56	8	0	I														0	0
0x152	GPS 3		25		MOVE	GPS latitude	lat_gps	0	32	0	I	7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8	23 22 21 20 19 18 17 16	31 30 29 28 27 26 25 24					deg	1,00E-07	0	4E+09	429,5	0	resolution at equator: 1.11 cm ((EARTH RADIUS / 360) * resolution)
						GPS longitude	lon_gps	32	32	0	I					7 6 5 4 3 2 1 0	15 14 13 12 11 10 9 8	23 22 21 20 19 18 17 16	31 30 29 28 27 26 25 24	deg	1,00E-07	0	4E+09	429,5	0	

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ID	Name	CAN Controller	Message Frequency [Hz]	Message length [bytes]	Sender	Signal Name	Abbreviation	Startbit	Signal Length	Data type (0=unsigned, 1=sign	Bit layout (Intel/Motorola)	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Physical Unit	Resolution	Offset	n/ of Steps	max value	min value	Remarks
												7 6 5 4 3 2 1 0	# # # # # # 9 8	# # # # # # # #	# # # # # # # #	# # # # # # # #	# # # # # # # #	# # # # # # # #	# # # # # # # #							
Inputs MOVE																										
0x200	External Platform State	4	25	8	External platform	External platform state	ExtPlatformState	0	2	0	I	1 0								-	1	0	4	4	0	0 = External platform not ok, 1 = External platform ok
						Time out setting	TimeOutSetting	2	2	0	I	1 0								-	1	0	4	4	0	0 = 0.2 [s], 1 = 0.5 [s], 2 = 1.0 [s], 3 = 2 [s],
						Not used		4	60	0	I															
0x203	Longitudinal Control requests	4	25	8	External platform	Desired control mode	ControlModeLon_ref	0	8	0	I	7 6 5 4 3 2 1 0								-	1	0	256	256	0	0 = Controller off 1 = Force Control 2 = Acceleration control 3 = Velocity control 4 = Time headway control 5 = Full Stop control 10 = ACC control
						Desired drive force	F_ref	8	16	1	I		7 6 5 4 3 2 1 0	# # # # # # 9 8						N	1	0	65536	32768	-32768	Desired force
						Desired acceleration	a_ref	24	12	1	I				7 6 5 4 3 2 1 0		7 6 5 4			m/s^2	0,01	0	4096	20,48	-20,48	Desired acceleration
						Desired velocity	v_ref	36	12	0	I					3 2 1 0		# # 9 8 7 6 5 4		m/s	0,01	0	4096	40,96	0	Desired velocity
						Desired time headway	TimeHeadway_ref	48	6	0	I								5 4 3 2 1 0	s	0,1	0	64	6,4	0	Desired time headway
						Brake Mode	BrakeMode_ref	54	2	0	I							1 0		-	1	0	4	4	0	0 = CC, 1 = ACC, 2 = Precrash
						Not used		56	8	0	I															
0x206	Lateral Control requests	4	25	8	External platform	Desired lateral control mode	ControlModeLat_ref	0	8	0	I	7 6 5 4 3 2 1 0								-	1	0	256	256	0	0 = Controller off 1 = Steering torque [Nm] 2 = Steering wheel angle [rad] 3 = Yawrate [rad/s] 10 = Steering torque [%]
						Desired steering torque [Nm]	Tsteer_ref_Nm	8	12	1	I		7 6 5 4 3 2 1 0		# # 9 8					N	0,05	0	4096	102,4	-102,4	Desired steering torque in Nm
						Desired steering wheel angle	delta_ref	20	12	1	I			3 2 1 0		# # 9 8 7 6 5 4				rad	0,01	0	4096	20,48	-20,48	Desired steering wheel angle
						Desired yaw rate	psiD_ref	32	12	1	I					7 6 5 4 3 2 1 0		# # 9 8		rad/sec	0,002	0	4096	4,096	-4,096	Desired yawrate
						Desired steering torque [%]	Tsteer_ref_rel	44	10	1	I						3 2 1 0		9 8 7 6 5 4	%	0,25	0	1024	128	-128	Desired steering torque in %
						SteeringMode	SteeringMode	54	2	0	I							1 0		-	1	0	4	4	0	0 = Safe - LKA; 1 = High-Performance - PA
						Not used		56	8	1	I															
0x230	Vehicle HMI outputs	4	25	8	External platform	Display state	DisplayState	0	4	0	I	3 2 1 0								-	1	0	16	16	0	0 = display off 1 = display Adaptive Cruise Control standby 2 = display Adaptive Cruise Control active 3 = display Cruise Control standby 4 = display Cruise Control active
						Headway mode icon state	HwModeIcon	4	2	0	I	1 0								-	1	0	4	4	0	0 = not used 1 = Headway mode long 2 = Headway mode medium 3 = Headway mode short
						Object detected icon state	ObjectDetectedIcon	6	1	0	I	0								-	1		2	2	0	0 = no icon, 1 = Object detected icon
						Setspeed value	SetspeedIcon	8	8	0	I		7 6 5 4 3 2 1 0							km/h	1		256	256	0	0 = no value visible, [1 - 255] = value on display
						PCSWarning		16	1	0	I				0					-	1		2	1	0	0 = no warning, 1 = warning visible as long as kept high
						Seatbelt Tensioner		17	1	0	I				0					-	1		2	1	0	0 = no tension, 1 = tension seatbelt, keep tension until transition to low (0)
						Buzzer	Buzzer	18	4	0	I			3 2 1 0						-	1		16	16	0	0 = silent, 1 beep twice, 2 beep LKA, 3 beep MOVE (200ms period, 50% duty cycle)
						LKAon		22	1	0	I			0						-	1		2	2	0	0 = off, 1 = on
						SteeringWheel		24	4	0	I				3 2 1 0					-	1		16	16	0	0 = off, 1 = visible, 2 = --, 3 = flashing
						Lines		28	4	0	I				3 2 1 0					-	1		16	16	0	0 = off, 1 = thin, 2 = solid, 3 = flashing
						Not used		32	48	0	I															
0x231	MOVE HMI outputs	4	25	8	External platform	Text line 1																				
						Text line 2																				
						Text line 3																				
						Text line 4														-						
						Led 1			2																	
						Led 2			2																	
						Led 3			2																	
						Led 4			2																	
						Buzzer 1			2																	
						Buzzer 2			2																	
						Led yelow			1																	
						Led yellow			1																	
						Led red			1																	

Not active yet