

Nota: Tutti i valori più grandi di un byte vengono spediti dalla centralina con formato Motorola (big endian)

Nel funzionamento bimotores il motore di sinistra avrà gli ID dei messaggi come da tabella, mentre quello di destra avrà gli ID con sommato 0x020

GENERAL INFO									
Name	Message		Startbit	Length [Bit]	Value Type	Factor	Offset	Unit	Comment
Hybrid/Full Electric	0x500	Periodic 1s	0	1	Unsigned	1	0	bit	0=FullElectric; 1=Hybrid
Dual/Single motor	0x500	Periodic 1s	1	1	Unsigned	1	0	bit	0=Single motor; 1=DualMotor
Reserved for future use	0x500	Periodic 1s	2	6	Unsigned	1	0	bit	
Versione Protocollo	0x500	Periodic 1s	8	8	Unsigned	0,1	0	numberes: 10 = v1.0	
Versione FW contralina	0x500	Periodic 1s	16	16	Unsigned	0,01	0	numberes: 100 = v1.00	
Versione FW azionamento	0x500	Periodic 1s	32	16	Unsigned	0,01	0	numberes: 100 = v1.00	
Modello Motore Diesel	0x500	Periodic 1s	48	8	Unsigned	1	0	enum	Vedi TABELLA 1
Modello Motore Elettrico	0x500	Periodic 1s	56	8	Unsigned	1	0	enum	Vedi TABELLA 2
INVERTER/MOTORE ELETTRICO									
Name	Message	Tx Type	Startbit	Length [Bit]	Value Type	Factor	Offset	Unit	Comment
Tensione bus	0x501	Periodic 100ms	0	16	Unsigned	0,1	0	V	
Corrente Motore	0x501	Periodic 100ms	16	16	Unsigned	0,1	0	A	
Temperatura Inverter	0x501	Periodic 100ms	32	8	Signed	1	0	°C	
Temperatura Motore	0x501	Periodic 100ms	40	8	Signed	1	0	°C	
Feedback RPM Motore	0x501	Periodic 100ms	48	16	Unsigned	1	0	RPM	
Inverter_NOT_Ready	0x502	Periodic 1s	0	1	Unsigned	1	0	bit	Codice sinistro: 209 Codice destro: 243
Warning Inverter Overtemperature	0x502	Periodic 1s	1	1	Unsigned	1	0	bit	Codice sinistro: 210 Codice destro: 244
Warning Motor Overtemperature	0x502	Periodic 1s	2	1	Unsigned	1	0	bit	Codice sinistro: 211 Codice destro: 245
Warning Motor Temperature Sensor Defect	0x502	Periodic 1s	3	1	Unsigned	1	0	bit	Codice sinistro: 212 Codice destro: 246
Warning I2T Motor Protection	0x502	Periodic 1s	4	1	Unsigned	1	0	bit	Codice sinistro: 213 Codice destro: 247
Warning Low SOC Level	0x502	Periodic 1s	5	1	Unsigned	1	0	bit	Codice sinistro: 214 Codice destro: 248
Warning Over Charge	0x502	Periodic 1s	6	1	Unsigned	1	0	bit	Codice sinistro: 215 Codice destro: 249
Warning Throttle Not Zero	0x502	Periodic 1s	7	1	Unsigned	1	0	bit	Codice sinistro: 216 Codice destro: 250
Warning reserved for future use	0x502	Periodic 1s	8	24	Unsigned	1	0	bit	Codice sinistro: 217 Codice destro: 251
Fault Overvoltage	0x502	Periodic 1s	32	1	Unsigned	1	0	bit	Codice sinistro: 218 Codice destro: 252
Fault Overcurrent	0x502	Periodic 1s	33	1	Unsigned	1	0	bit	Codice sinistro: 219 Codice destro: 253
Fault Undervoltage	0x502	Periodic 1s	34	1	Unsigned	1	0	bit	Codice sinistro: 220 Codice destro: 254
Fault Short Circuit Power Stage	0x502	Periodic 1s	35	1	Unsigned	1	0	bit	Codice sinistro: 221 Codice destro: 255
Fault Rotor Initial Position Error	0x502	Periodic 1s	36	1	Unsigned	1	0	bit	Codice sinistro: 222 Codice destro: 256
Fault HE Disconnected	0x502	Periodic 1s	37	1	Unsigned	1	0	bit	Codice sinistro: 223 Codice destro: 257
Fault HE Wrong Sequence	0x502	Periodic 1s	38	1	Unsigned	1	0	bit	Codice sinistro: 224 Codice destro: 258
Fault Aux Contactor	0x502	Periodic 1s	39	1	Unsigned	1	0	bit	Codice sinistro: 225 Codice destro: 259
Fault Inverter Overtemperature	0x502	Periodic 1s	40	1	Unsigned	1	0	bit	Codice sinistro: 226 Codice destro: 260
Fault IXT Power Protection	0x502	Periodic 1s	41	1	Unsigned	1	0	bit	Codice sinistro: 227 Codice destro: 261
Fault Motor Overtemperature	0x502	Periodic 1s	42	1	Unsigned	1	0	bit	Codice sinistro: 228 Codice destro: 262
Fault I2T Motor Protection	0x502	Periodic 1s	43	1	Unsigned	1	0	bit	Codice sinistro: 229 Codice destro: 263
Fault Emergency Input	0x502	Periodic 1s	44	1	Unsigned	1	0	bit	Codice sinistro: 230 Codice destro: 264
Fault Throttle Pot Disconnected	0x502	Periodic 1s	45	1	Unsigned	1	0	bit	Codice sinistro: 231 Codice destro: 265
Fault Brake Pot Disconnected	0x502	Periodic 1s	46	1	Unsigned	1	0	bit	Codice sinistro: 232 Codice destro: 266
Fault Clutch Pot Disconnected	0x502	Periodic 1s	47	1	Unsigned	1	0	bit	Codice sinistro: 233 Codice destro: 267
Fault PTC Power U Defect	0x502	Periodic 1s	48	1	Unsigned	1	0	bit	Codice sinistro: 234 Codice destro: 268
Fault PTC Power V Defect	0x502	Periodic 1s	49	1	Unsigned	1	0	bit	Codice sinistro: 235 Codice destro: 269
Fault PTC Power W Defect	0x502	Periodic 1s	50	1	Unsigned	1	0	bit	Codice sinistro: 236 Codice destro: 270
Fault Contactor	0x502	Periodic 1s	51	1	Unsigned	1	0	bit	Codice sinistro: 237 Codice destro: 271
Fault CTR CAN Link	0x502	Periodic 1s	52	1	Unsigned	1	0	bit	Codice sinistro: 238 Codice destro: 272
Fault reserved for future use	0x502	Periodic 1s	53	8	Unsigned	1	0	bit	Codice sinistro: 239 Codice destro: 273
Fault Wrong Configuration	0x502	Periodic 1s	61	1	Unsigned	1	0	bit	Codice sinistro: 240 Codice destro: 274
Fault CANA Defect	0x502	Periodic 1s	62	1	Unsigned	1	0	bit	Codice sinistro: 241 Codice destro: 275
Fault CANB Defect	0x502	Periodic 1s	63	1	Unsigned	1	0	bit	Codice sinistro: 242 Codice destro: 276
Inverter Enabled	0x503	Periodic 1s	0	1	Unsigned	1	0	bit	
Reserved for future use	0x503	Periodic 1s	1	7	Unsigned	1	0	bit	
Riferimento RPM	0x503	Periodic 1s	8	16	Unsigned	1	0	RPM	
Limite Corrente	0x503	Periodic 1s	24	16	Signed	0,1	0	A	
Limite Corrente Rigenerata	0x503	Periodic 1s	40	16	Signed	0,1	0	A	
Reserved for future use	0x503	Periodic 1s	56	8	Unsigned	1	0	bit	
BATTERIE ALTA POTENZA									
Name	Message		Startbit	Length [Bit]	Value Type	Factor	Offset	Unit	Comment
Tensione totale	0x505	Periodic 1s	0	16	Unsigned	0,1	0	V	
Corrente totale	0x505	Periodic 1s	16	16	Signed	0,1	0	A	
Temperatura batterie	0x505	Periodic 1s	32	8	Signed	1	0	°C	
Temperatura BMS	0x505	Periodic 1s	40	8	Signed	1	0	°C	
SOC	0x505	Periodic 1s	48	8	Unsigned	1	0	%	
Reserved for future use	0x505	Periodic 1s	56	8	Unsigned	1	0	bit	
Alarm Overcurrent	0x506	Periodic 1s	0	1	Unsigned	1	0	bit	Codice sinistro: 277 Codice destro: 293
Alarm Overtemperature Cell	0x506	Periodic 1s	1	1	Unsigned	1	0	bit	Codice sinistro: 278 Codice destro: 294
Alarm Overtemperature Board	0x506	Periodic 1s	2	1	Unsigned	1	0	bit	Codice sinistro: 279 Codice destro: 295
Alarm Charge Over Voltage	0x506	Periodic 1s	3	1	Unsigned	1	0	bit	Codice sinistro: 280 Codice destro: 296
Alarm Discharge Under Voltage	0x506	Periodic 1s	4	1	Unsigned	1	0	bit	Codice sinistro: 281 Codice destro: 297
Alarm Low Energy	0x506	Periodic 1s	5	1	Unsigned	1	0	bit	Codice sinistro: 282 Codice destro: 298

Alarm Charge Minimum Temperature	0x506	Periodic 1s	6	1	Unsigned	1	0	bit	Codice sinistro: 283 Codice destro: 299
Alarm Charge Minimum Voltage	0x506	Periodic 1s	7	1	Unsigned	1	0	bit	Codice sinistro: 284 Codice destro: 300
Warning Maximum Current	0x506	Periodic 1s	8	1	Unsigned	1	0	bit	Codice sinistro: 285 Codice destro: 301
Warning Cell Max Temperature	0x506	Periodic 1s	9	1	Unsigned	1	0	bit	Codice sinistro: 286 Codice destro: 302
Warning Board Max Temperature	0x506	Periodic 1s	10	1	Unsigned	1	0	bit	Codice sinistro: 287 Codice destro: 303
Warning Charge Max Voltage	0x506	Periodic 1s	11	1	Unsigned	1	0	bit	Codice sinistro: 288 Codice destro: 304
Warning Discharge Min Voltage	0x506	Periodic 1s	12	1	Unsigned	1	0	bit	Codice sinistro: 289 Codice destro: 305
Warning Energy Level	0x506	Periodic 1s	13	1	Unsigned	1	0	bit	Codice sinistro: 290 Codice destro: 306
Warning Charge Minimum Voltage	0x506	Periodic 1s	14	1	Unsigned	1	0	bit	Codice sinistro: 291 Codice destro: 307
Warning Low Voltage	0x506	Periodic 1s	15	1	Unsigned	1	0	bit	Codice sinistro: 292 Codice destro: 308
Charge Enabled	0x506	Periodic 1s	16	1	Unsigned	1	0	bit	
Discharge Enabled	0x506	Periodic 1s	17	1	Unsigned	1	0	bit	
Reserved for future use	0x506	Periodic 1s	18	6	Unsigned	1	0	bit	
Power Consumed/Regenerated	0x506	Periodic 1s	24	16	Signed	0,1	0	KW	+ = potenza consumata; -= potenza rigenerata
Time To Empty	0x506	Periodic 1s	40	16	Unsigned	1	0	min.	
Tensione batteria ausiliaria (12V)	0x506	Periodic 1s	56	8	Unsigned	0,1	0	V	

MOTORE ENDOTERMICO

Name	Message	Startbit	Length [Bit]	Value Type	Factor	Offset	Unit	Comment
Feedback RPM Motore	0x508	Periodic 100ms	0	16	Unsigned	1	0	RPM
Temperatura Refrigerante	0x508	Periodic 100ms	16	8	Signed	1	0	°C
Battery Voltage	0x508	Periodic 100ms	24	16	Unsigned	0,1	0	V
Throttle Pedal Position	0x508	Periodic 100ms	40	8	Unsigned	1	0	%
Glow Plug Status	0x508	Periodic 100ms	48	1	Unsigned	1	0	bit
Reserved for future use	0x508	Periodic 100ms	49	7	Unsigned	1	0	bit
Stato Diesel	0x508	Periodic 100ms	56	8	Unsigned	1	0	status
								0 = WAIT
								10 = WAIT CRANKING
								50 = RUNNING
								110 = FAULT
Fuel level 1	0x509	Periodic 1s	0	8	Unsigned	1	0	%
Fuel level 2	0x509	Periodic 1s	8	8	Unsigned	1	0	%
Reserved for future use	0x509	Periodic 1s	16	48	Unsigned	1	0	bit

MANETTA/ATTUATORE

Name	Message	Startbit	Length [Bit]	Value Type	Factor	Offset	Unit	Comment
Acceleratore	0x50A	Periodic 100ms	0	8	Unsigned	1	0	%
Marcia richiesta	0x50A	Periodic 100ms	8	8	Unsigned	1	0	bit
Marcia validata	0x50A	Periodic 100ms	16	8	Unsigned	1	0	bit
Posizione Trim	0x50A	Periodic 100ms	24	8	Signed	1	0	%
Reserved for future use	0x50A	Periodic 100ms	32	32	Unsigned	1	0	bit

VEICOLO

Name	Message	Startbit	Length [Bit]	Value Type	Factor	Offset	Unit	Comment
Stato Veicolo	0x50C	Periodic 500ms	0	8	Unsigned	1	0	status
								0 = WAIT
								10= ENABLE BMS E INVERTER
								20= CLOSE TELE BATT
								30 = ENABLE INVERTER
								40 = INVERTER OFF
								70 = RUNNING EV MODE
								72 = RUNNING RIGENERAZIONE
								80 = FAULT ELETTRICO
								100 = SHUTDOWN
								120 = VEICOLO IN RICARICA
								130 = MODALITA SOLO DIESEL
Modalità Ibrida	0x50C	Periodic 500ms	8	1	Unsigned	1	0	bit
Modalità Elettrica	0x50C	Periodic 500ms	9	1	Unsigned	1	0	bit
Modalità Diesel	0x50C	Periodic 500ms	10	1	Unsigned	1	0	bit
Pressione acqua mare OK	0x50C	Periodic 500ms	11	1	Unsigned	1	0	bit
Pressione glicole OK	0x50C	Periodic 500ms	12	1	Unsigned	1	0	bit
Basso stato carica	0x50C	Periodic 500ms	13	1	Unsigned	1	0	bit
Reserved for future use	0x50C	Periodic 500ms	14	2	Unsigned	1	0	bit
Temperatura sonda ingresso acqua mare	0x50C	Periodic 500ms	16	8	Signed	1	0	°C
Temperatura sonda uscita acqua mare	0x50C	Periodic 500ms	24	8	Signed	1	0	°C
Temperatura sonda ingresso glicole	0x50C	Periodic 500ms	32	8	Signed	1	0	°C
Temperatura sonda uscita glicole	0x50C	Periodic 500ms	40	8	Signed	1	0	°C
Centralina elettrica accesa	0x50C	Periodic 500ms	48	1	Unsigned	1	0	bit
Centralina diesel accesa	0x50C	Periodic 500ms	49	1	Unsigned	1	0	bit
Reserved for future use	0x50C	Periodic 500ms	50	6	Unsigned	1	0	bit
Tensione alimentazione ECU (12V)	0x50C	Periodic 500ms	56	8	Unsigned	0,1	0	V
Contaore	0x50D	Periodic 1s	0	32	Unsigned	1	0	min.
Contaore motore elettrico	0x50D	Periodic 1s	32	32	Unsigned	1	0	min.
Contaore motore diesel	0x50E	Periodic 1s	0	32	Unsigned	1	0	min.
Reserved for future use	0x50E	Periodic 1s	32	32	Unsigned	1	0	bit
Alarm Ingresso di emergenza	0x50F	Periodic 1s	0	1	Unsigned	1	0	bit
Alarm Pulsante Start/Stop	0x50F	Periodic 1s	1	1	Unsigned	1	0	bit
Alarm Guasto attuatori	0x50F	Periodic 1s	2	1	Unsigned	1	0	bit
Alarm reserved fo future use	0x50F	Periodic 1s	3	1	Unsigned	1	0	bit
Alarm CAN bus manetta di comando	0x50F	Periodic 1s	4	1	Unsigned	1	0	bit
Alarm CAN bus attuatori	0x50F	Periodic 1s	5	1	Unsigned	1	0	bit
Alarm reserved fo future use	0x50F	Periodic 1s	6	2	Unsigned	1	0	bit
Alarm 12V ECU basso	0x50F	Periodic 1s	8	1	Unsigned	1	0	bit
Alarm reserved fo future use	0x50F	Periodic 1s	9	6	Unsigned	1	0	bit
Alarm memoria eeprom difettosa	0x50F	Periodic 1s	15	1	Unsigned	1	0	bit

Alarm azionamento motore	0x50F	Periodic 1s	16	1	Unsigned	1	0	bit	Codice sinistro: 315 Codice destro: 339
Alarm motore termico	0x50F	Periodic 1s	17	1	Unsigned	1	0	bit	Codice sinistro: 316 Codice destro: 340
Alarm batteria alta tensione	0x50F	Periodic 1s	18	1	Unsigned	1	0	bit	TBD
Alarm reserved fo future use	0x50F	Periodic 1s	19	1	Unsigned	1	0	bit	
Alarm CAN bus motore termico	0x50F	Periodic 1s	20	1	Unsigned	1	0	bit	Codice sinistro: 317 Codice destro: 341
Alarm CAN bus azionamento	0x50F	Periodic 1s	21	1	Unsigned	1	0	bit	Codice sinistro: 318 Codice destro: 342
Alarm CAN bus batteria	0x50F	Periodic 1s	22	1	Unsigned	1	0	bit	Codice sinistro: 319 Codice destro: 343
Alarm CAN bus bimotore	0x50F	Periodic 1s	23	1	Unsigned	1	0	bit	Codice sinistro: 320 Codice destro: 344
Alarm attuatore marce sinistro	0x50F	Periodic 1s	24	1	Unsigned	1	0	bit	Codice sinistro: 321 Codice destro: 345
Alarm attuatore marce destro	0x50F	Periodic 1s	25	1	Unsigned	1	0	bit	Codice sinistro: 322 Codice destro: 346
Alarm reserved fo future use	0x50F	Periodic 1s	26	2	Unsigned	1	0	bit	
Alarm 12V AUX basso	0x50F	Periodic 1s	28	1	Unsigned	1	0	bit	TBD
Alarm reserved fo future use	0x50F	Periodic 1s	29	3	Unsigned	1	0	bit	
Warning basso ivello SOC	0x50F	Periodic 1s	32	1	Unsigned	1	0	bit	Codice sinistro: 323 Codice destro: 347
Warning manetta accelerata	0x50F	Periodic 1s	33	1	Unsigned	1	0	bit	Codice sinistro: 324 Codice destro: 348
Warning marcia inserita	0x50F	Periodic 1s	34	1	Unsigned	1	0	bit	Codice sinistro: 325 Codice destro: 349
Warning cortocircuito pompa idroguida	0x50F	Periodic 1s	35	1	Unsigned	1	0	bit	Codice sinistro: 326 Codice destro: 350
Warning pressostato pompa mare	0x50F	Periodic 1s	36	1	Unsigned	1	0	bit	Codice sinistro: 327 Codice destro: 351
Warning cortocircuito pompa mare	0x50F	Periodic 1s	37	1	Unsigned	1	0	bit	Codice sinistro: 328 Codice destro: 352
Warning pressostato pompa glicole	0x50F	Periodic 1s	38	1	Unsigned	1	0	bit	Codice sinistro: 329 Codice destro: 353
Warning cortocircuito pompa glicole	0x50F	Periodic 1s	39	1	Unsigned	1	0	bit	Codice sinistro: 330 Codice destro: 354
Warning cavo di ricarica inserito	0x50F	Periodic 1s	40	1	Unsigned	1	0	bit	Codice sinistro: 331 Codice destro: 355
Warning 12V ECU basso	0x50F	Periodic 1s	41	1	Unsigned	1	0	bit	TBD
Warning 12V AUX basso	0x50F	Periodic 1s	42	1	Unsigned	1	0	bit	TBD
Warning reseed fo future use	0x50F	Periodic 1s	43	1	Unsigned	1	0	bit	
Warning velocità limitata	0x50F	Periodic 1s	44	1	Unsigned	1	0	bit	Codice sinistro: 332 Codice destro: 356
Warning reseed fo future use	0x50F	Periodic 1s	45	19	Unsigned	1	0	bit	

TABELLA 1	
Engine Motor Model	Value
Nessuno	0
Mercury OOD 3.0L	1
Hyundai S270	2
Volvo Penta D4/D6	3

TABELLA 2	
Electric Motor Model	Value
Nessuno	0
THOR 3000	1
THOR 6000	2