

BE2K-PLUS MODBUS PROTOCOL

Modbus general information:

Communication speed: 9600 baud
Data bits: 8
Parity: none
Stop bits: 1
Transmission mode: RTU
Flow control: none
Device address: 1 (default)

The setting RS485 NODE ADDRESS can be found at parameter RS485 Node.
Full information about MODBUS can be found at www.modbus.org

The communication protocol meets the MODBUS RTU convention and includes the following function codes:

Code (hex)	Function
03	Read Holding Registers
04	Read Input Registers
10	Write Multiple Registers

Note:

If the client want to use ModlinkDemo must access the menu: Tools -> Modbus Connection Options... and Tools -> Modbus Client Options... for configure the modbus communication.

The program is free and can be downloaded from the address:
www.ozm.cz/ivobauer/modlink/Downloads.htm

BE 2K+ MODBUS Holding Registers:

Registers Address	BE 2K+ Parameters	Min Value	Max Value	Notes
40000	-	-	-	
40001	MAINS BREAKER	0	118	Note 3,
40002	MAINS FAILURE	0	1498	Note 2,
40003	MAINS RESTORE	0	1498	Note 2,
40004	KM CHANGEOVER	1	150	Note 4,
40005	UNDER VOLTAGE	60	9990	Note 1,
40006	OVER VOLTAGE	60	9990	Note 1,
40007	UNDER HZ	200	700	Note 1, Note 4,
40008	OVER HZ	200	700	Note 1, Note 4,
40009	PHASE UNBALANCE	10	999	Note 1,
40010	PHASE MODE	1	4	Note 7,
40011	VAC RATIO	10	150	Note 4,
40012	UNDER VOLTAGE	60	9990	Note 1,
40013	BYPASS DELAY	1	15	
40014	OVER VOLTAGE	60	9990	Note 1,
40015	BYPASS DELAY	1	15	
40016	UNDER HZ	200	700	Note 1, Note 4,
40017	BYPASS DELAY	1	15	
40018	OVER HZ	200	700	Note 1, Note 4,
40019	BYPASS DELAY	1	15	
40020	WARNING CURRENT	1	9990	Note 1,
40021	BYPASS DELAY	1	74	Note 3,
40022	OVER CURRENT	1	9990	Note 1,
40023	BYPASS DELAY	1	74	Note 3,
40024	SHORT CIRCUIT	1	9990	Note 1,
40025	BYPASS DELAY	0	150	Note 4,
40026	PHASE UNBALANCE	10	999	Note 1,
40027	BYPASS DELAY	1	59	
40028	ALTERNATOR FAIL	0	1	Note 5,
40029	PHASE MODE	1	4	Note 7,
40030	KVA MAX WARN	10	9990	Note 1,
40031	KVA DELAY	1	118	Note 3,
40032	KVA MIN WARN	10	9990	Note 1,
40033	KVA DELAY	1	118	Note 3,
40034	OVER KVA SHUT.	10	9990	Note 1,
40035	SHUT DELAY	1	118	Note 3,
40036	REVERSE POWER	10	9990	Note 1,

40037	BYPASS DELAY	1	15	
40038	EARTH FAULT	1	999	Note 1, Note 4,
40039	BYPASS DELAY	3	100	Note 4,
40040	CT SIZE L1L2L3	5	9990	
40041	CT SIZE EARTH	5	9990	
40042	VAC_RATIO	10	150	Note 4,
40043	-	-	-	
40044	PRE-LUBE TIME	1	15	
40045	CRANK TIME	1	15	
40046	CRANK REST TIME	3	15	
40047	START ATTEMPTS	3	15	
40048	CHARGER VOLTAGE	30	300	Note 1, Note 4,
40049	GENERATOR VAC	60	9990	Note 1,
40050	GENERATOR HZ	200	700	Note 1, Note 4,
40051	SPEED RPM	100	800	Note 1,
40052	CANBUS	1	60	Note 1,
40053	PREGLOW TIME	1	74	Note 1, Note 3,
40054	PREGLOW MODE	1	4	
40055	GAS PURGE	1	15	
40056	WARMUP TIME	0	118	Note 3,
40057	COOLING TIME	0	118	Note 3,
40058	STOP SOLENOID	1	74	Note 3,
40059	BELT BREAK VDC	30	300	Note 1, Note 4,
40060	LOW BAR WARNING	1	200	Note 1, Note 4,
40061	LOW BAR SHUTDOWN	1	200	Note 1, Note 4,
40062	ANALOG MODE	0	4	Note 10,
40063	ANALOG INPUT	0	5	
40064	HIGH *C WARNING	1	250	Note 1,
40065	HIGH *C SHUTDOWN	1	250	Note 1,
40066	ANALOG MODE	0	4	Note 10,
40067	ANALOG INPUT	0	5	
40068	HIGH SHUTDOWN	1	250	Note 1,
40069	HIGH *C WARNING	1	250	Note 1,
40070	LOW *C WARNING	1	250	Note 1,
40071	ANALOG MODE	0	4	Note 10,
40072	ANALOG INPUT	0	5	
40073	HIGH WARNING	1	250	Note 1,
40074	HIGH SHUTDOWN	1	250	Note 1,
40075	ANALOG MODE	0	4	Note 10,
40076	ANALOG INPUT	0	5	
40077	BYPAS TIMER	2	99	
40078	FAIL TO STOP	0	1	Note 5,
40079	-	-	-	
40080	TOOTH COUNT	100	5000	Note 1, Note 4,
40081	UNDER SPEED	100	4000	Note 1,

40082	BYPASS DELAY	1	15	
40083	OVER SPEED	100	4000	Note 1,
40084	BYPASS DELAY	1	15	
40085	IDLE TIME	1	118	Note 1, Note 3,
40086	IDLE SPEED	100	4000	Note 1,
40087	NOMINAL SPEED	100	4000	Note 1,
40088	DROOP SETTING	1	100	Note 1, Note 4,
40089	NUMBER OF POLES	2	4	Note 1, Note 9
40090	TANK EMPTY	1	99	Note 1,
40091	TANK EMPTY DELAY	15	158	Note 1, Note 3,
40092	LOW FUEL WRN	1	99	Note 1,
40093	HIGH FUEL WRN	1	99	Note 1,
40094	ANALOG MODE	0	4	Note 10,
40095	ANALOG INPUT	0	5	
40096	PUMP START	1	99	Note 1,
40097	PUMP STOP	1	99	Note 1,
40098	PUMP TIMEOUT	15	118	Note 1, Note 3,
40099	NFPA110	0	1	Note 5,
40100	HORN TIMEOUT	5	118	Note 1, Note 3,
40101	HOUR COUNTER SET	0	65535	
40102	RENTAL CONTRACT	1	9999	Note 1,
40103	EJP	1	158	Note 3,
40104	KG TEST CONTROL	0	1	Note 5,
40105	RUN TIMEOUT	60	1439	Note 1, Note 2,
40106	DUAL SET RUN TIME	60	1439	Note 1, Note 2,
40107	MENTENANCE 1	1	9999	Note 1,
40108	MENTENANCE 2	1	9999	Note 1,
40109	MENTENANCE 3	1	9999	Note 1,
40110	RS485 NODE	1	127	
40111	HIGH AUX *C START	1	60	Note 1,
40112	LOW AUX *C STOP	1	60	Note 1,
40113	LOW BATTERY START	80	300	Note 1, Note 4,
40114	HIGH BATTERY STOP	80	300	Note 1, Note 4,
40115	TELECOM BATTERY	80	600	Note 1, Note 4,
40116	TEMPERATURE ROOM	1	60	Note 1,
40117	-			
40118	-			
40119	-			
40120	-			
40121	-			
40122	-			
40123	CLOCK DAY			
40124	CLOCK MONTH	1	12	
40125	CLOCK YEAR	2000	2099	
40126	CLOCK HOUR	0	23	

40127	CLOCK MINUTE	0	59	
40128	SAVE_CLOCK			
40129	DATE FORMAT	0	1	Note 8,
40130	TEST DAY	1	31	
40131	TEST MONTH	1	12	
40132	TEST YEAR	2000	2099	
40133	TEST HOUR	0	23	
40134	TEST MINUTE	0	59	
40135	TEST DURATION	1	60	Note 1,
40136	TEST REPEAT	1	60	Note 1,
40137	POINT 1 BAR	0	200	Note 4,
40138	POINT 1 OHM	0	1000	
40139	POINT 2 BAR	0	200	Note 4,
40140	POINT 2 OHM	0	1000	
40141	POINT 3 BAR	0	200	Note 4,
40142	POINT 3 OHM	0	1000	
40143	POINT 4 BAR	0	200	Note 4,
40144	POINT 4 OHM	0	1000	
40145	POINT 5 BAR	0	200	Note 4,
40146	POINT 5 OHM	0	1000	
40147	POINT 6 BAR	0	200	Note 4,
40148	POINT 6 OHM	0	1000	
40149	4MA	0	200	Note 4,
40150	20MA	0	200	Note 4,
40151	0V	0	200	Note 4,
40152	10V	0	200	Note 4,
40153	POINT 1 DEG.	0	250	
40154	POINT 1 OHM	0	1000	
40155	POINT 2 DEG.	0	250	
40156	POINT 2 OHM	0	1000	
40157	POINT 3 DEG.	0	250	
40158	POINT 3 OHM	0	1000	
40159	POINT 4 DEG.	0	250	
40160	POINT 4 OHM	0	1000	
40161	POINT 5 DEG.	0	250	
40162	POINT 5 OHM	0	1000	
40163	POINT 6 DEG.	0	250	
40164	POINT 6 OHM	0	1000	
40165	4MA	0	250	
40166	20MA	0	250	
40167	0V	0	250	
40168	10V	0	250	
40169	POINT 1 DEG.	0	250	
40170	POINT 1 OHM	0	1000	
40171	POINT 2 DEG.	0	250	

40172	POINT 2 OHM	0	1000	
40173	POINT 3 DEG.	0	250	
40174	POINT 3 OHM	0	1000	
40175	POINT 4 DEG.	0	250	
40176	POINT 4 OHM	0	1000	
40177	POINT 5 DEG.	0	250	
40178	POINT 5 OHM	0	1000	
40179	POINT 6 DEG.	0	250	
40180	POINT 6 OHM	0	1000	
40181	4MA	0	250	
40182	20MA	0	250	
40183	0V	0	250	
40184	10V	0	250	
40185	POINT 1 DEG.	0	250	
40186	POINT 1 OHM	0	1000	
40187	POINT 2 DEG.	0	250	
40188	POINT 2 OHM	0	1000	
40189	POINT 3 DEG.	0	250	
40190	POINT 3 OHM	0	1000	
40191	POINT 4 DEG.	0	250	
40192	POINT 4 OHM	0	1000	
40193	POINT 5 DEG.	0	250	
40194	POINT 5 OHM	0	1000	
40195	POINT 6 DEG.	0	250	
40196	POINT 6 OHM	0	1000	
40197	4MA	0	250	
40198	20MA	0	250	
40199	0V	0	250	
40200	10V	0	250	
40201	POINT 1 LEVEL	0	99	
40202	POINT 1 OHM	0	1000	
40203	POINT 2 LEVEL	0	99	
40204	POINT 2 OHM	0	1000	
40205	POINT 3 LEVEL	0	99	
40206	POINT 3 OHM	0	1000	
40207	POINT 4 LEVEL	0	99	
40208	POINT 4 OHM	0	1000	
40209	POINT 5 LEVEL	0	99	
40210	POINT 5 OHM	0	1000	
40211	POINT 6 LEVEL	0	99	
40212	POINT 6 OHM	0	1000	
40213	4MA	0	99	
40214	20MA	0	99	
40215	0V	0	99	
40216	10V	0	99	

40217	INPUT1 OPTION	0	32	
40218	INPUT1 POLARITY	0	1	Note 6,
40219	INPUT2 OPTION	0	32	
40220	INPUT2 POLARITY	0	1	Note 6,
40221	INPUT3 OPTION	0	32	
40222	INPUT3 POLARITY	0	1	Note 6,
40223	INPUT4 OPTION	0	32	
40224	INPUT4 POLARITY	0	1	Note 6,
40225	INPUT5 OPTION	0	32	
40226	INPUT5 POLARITY	0	1	Note 6,
40227	ALARM 1 CONTACT	0	1	Note 6,
40228	ALARM 2 CONTACT	0	1	Note 6,
40229	OUTPUT1	0	79	
40230	OUTPUT2	0	79	
40231	OUTPUT3	0	79	
40232	OUTPUT4	0	79	
40233	OUTPUT5	0	79	
40234	ENGINE TYPE	0	1000	Note 13,
-	-	-	-	
40243	CONTRAST	0	100	Note 12,
40243	LANGUAGE	0	3	Note 11,
41001	ACK WARNINGS	0	1	Note 5,
41002	START ENGINE	0	1	Note 5,
41003	STOP ENGINE COMMAND	0	1	Note 5,
41004	MODE OFF COMMAND	0	1	Note 5,
41005	MODE MANUAL COMMAND	0	1	Note 5,
41006	MODE AUTO COMMAND	0	1	Note 5,
41007	MODE TEST COMMAND	0	1	Note 5,
41008	CLOSE KM COMMAND	0	1	Note 5,
41009	CLOSE KG COMMAND	0	1	Note 5,
41010	OPEN KM/KG COMMAND	0	1	Note 5,
41011	UP BUTTON COMMAND	0	1	Note 5,
41012	DOWN BUTTON COMMAND	0	1	Note 5,
41013	LEFT BUTTON COMMAND	0	1	Note 5,
41014	RIGHT BUTTON COMMAND	0	1	Note 5,
41015	MEMORY INIT COMMAND	0	1	Note 5,
41016	CLEAR EVENTS LIST	0	1	Note 5,
41017	CLEAR ENERGY COUNTER	0	1	Note 5,
41018	CLEAR START COUNTER	0	1	Note 5,
41019	CLEAR USER PASSWORD	0	1	Note 5,
41020	CLEAR OEM PASSWORD	0	1	Note 5,
41021	START GENERATOR	0	1	Note 5,

45000	OEM password character 0			Note 15
45001	OEM password character 1			Note 15
45002	OEM password character 2			Note 15
45003	OEM password character 3			Note 15
45004	OEM unlock/save command	0	2	Note 14
45005	USER password character 0			Note 15
45006	USER password character 1			Note 15
45007	USER password character 2			Note 15
45008	USER password character 3			Note 15
45009	USER unlock/save command	0	2	Note 14
46000	Unit name (2 characters)			Note 15
46001	Unit name (2 characters)			Note 15
46002	Unit name (2 characters)			Note 15
46003	Unit name (2 characters)			Note 15
46004	Unit name (2 characters)			Note 15
46005	Unit name (2 characters)			Note 15
46006	Unit name (2 characters)			Note 15
46007	Unit name (2 characters)			Note 15
46008	Unit name (2 characters)			Note 15
46009	Unit name (2 characters)			Note 15
46010	Unit location (2 characters)			Note 15
46011	Unit location (2 characters)			Note 15
46012	Unit location (2 characters)			Note 15
46013	Unit location (2 characters)			Note 15
46014	Unit location (2 characters)			Note 15
46015	Unit location (2 characters)			Note 15
46016	Unit location (2 characters)			Note 15
46017	Unit location (2 characters)			Note 15
46018	Unit location (2 characters)			Note 15
46019	Unit location (2 characters)			Note 15
46020	Serial number (2 characters)			Note 15
46021	Serial number (2 characters)			Note 15
46022	Serial number (2 characters)			Note 15
46023	Serial number (2 characters)			Note 15
46024	Serial number (2 characters)			Note 15
46025	Serial number (2 characters)			Note 15
46026	Serial number (2 characters)			Note 15
46027	Serial number (2 characters)			Note 15
46028	Serial number (2 characters)			Note 15
46029	Serial number (2 characters)			Note 15
46040	Phone number 1 (2 digits)			Note 15
46041	Phone number 1 (2 digits)			Note 15
46042	Phone number 1 (2 digits)			Note 15
46043	Phone number 1 (2 digits)			Note 15

Notes:

Note 1 - To program the parameter with the value OFF, we send a lower value than the minimum or a higher value than the maximum.

Example:

1) For programming parameter “UNDER SPEED” with value OFF, we send the value 99 (100-1).

2) For programming parameter “OVER SPEED” with value OFF we send the value 4001 (4000+1).

Note 2 - To program parameter with a value in seconds we need just to send the value. To program with a value in minutes we must sum 59 to the value; if we want hours and minutes must do the calculation after formula: $(\text{hours} * 60 + \text{minutes} + 59)$

Example:

1) For programming parameter “MAINS FAILURE” with value 37 sec we send the value 37. If we want with value 10 minutes, we send 69 (10 + 59). If we want with value 10 hours and 20 minutes, we send 679 (10 * 60 + 20 + 59).

Note 3 - To program parameter with a value in seconds we need just to send the value. To program with a value in minutes we must sum 59 to the value;

Example:

1) For programming parameter “STOP SOLENOID” with value 48 sec we send the value 48. If we want with value 5 min, we send 64 (5 + 59).

Note 4 – The value we send is 10 times bigger.

Example: If we want to program the parameter “CHARGER VOLTAGE” with the value 8,7V, we must send the value 87 (8,7 * 10)

Note 5 – Parameter has the following values: 0 – OFF; 1 – ON;

Note 6 – Parameter has the following values: 1 – NO; 2 – NC;

Note 7 – Parameter has the following values: 1 – 1PHASE; 2 – 3PHASE; 3 – 3PHASE+CW; 4 – 3PHASE+CCW;

Note 8 – Parameter has the following values: 0 – DD/MM/YY;
1 – MM/DD/YY;

Note 9 – Parameter has the following values: 2 – 2 poles; 4 – 4 poles;
other – OFF;

Note 10 – Parameter has the following values: 0 – OHM; 1 – CAN;
2 – 4-20MA; 3 – 0-10V; 4 – 0-5V;

Note 11 – Parameter has the following values: 0 – ENGLISH; 1 – GREEK;
2 – SPANISH; 3 – ITALIAN;

Note 12 – Parameter has the following values: 0, 25, 50, 75, 100. Do not set
others values.

Note 13 – Parameter has the following values: 0 – ENGINE_STANDARD
1-STANDARD_J1939, 2-VOLVO_EDC3, 3-VOLVO_EDC4, 4-VOLVO_EMS2,
5-SCANIA_EMS, 6-SCANIA_EMS2, 7-JOHN_DEERE, 8-PERKINS_2003_2008,
9-PERKINS_1100, 10-CUMMINS_CM850, 11-CUMMINS_CM876,
12-CUMMINS_CM570, 13-CUMMINS_MCM700, 14-CUMMINS_CM558,
15-CUMMINS_PCC13XX, 16-DEUTZ_EMR2, 17-DEUTZ_EMR3,
18-DETROIT_DIESEL, 19-IVECO_CURSOR, 20-IVECO_VECTOR,
21-MTU_MDEC302_303, 22-KUBOTA, 23-ISUZU, 24-YANMAR,
25-DAIMLER_CRYSLER, 26-CATERPILLAR,

Note 14 – 0 = nothing, 1 = save password, 2 = disable password (unlock first)

Note 15 – each byte of the register store the ascii code of one character

BE 2K+ MODBUS Input Registers:

Registers Address	Measurement Value	Measurement Unit
30000	-	
30001	VOLTAGE L1-L2	V
30002	VOLTAGE L2-L3	V
30003	VOLTAGE L1-L3	V
30004	VOLTAGE L1-N	V
30005	VOLTAGE L2-N	V
30006	VOLTAGE L3-N	V
30007	GENERATOR HERTZ	10 * Hz
30008	GENERATOR SEQUENCE	0 – CW, 1 – CCW
30009	KG STATUS	0 – OFF, 1 - ON
30010	MAINS VOLTAGE R	V
30011	MAINS VOLTAGE S	V
30012	MAINS VOLTAGE T	V
30013	MAINS VOLTAGE R-N	V
30014	MAINS VOLTAGE S-N	V
30015	MAINS VOLTAGE T-N	V
30016	MAINS HERTZ	V
30017	KM STATUS	0 – OFF, 1 - ON
30018	MAINS SIMULATION	0 – OFF, 1 - ON
30019	MAINS SEQUENCE	0 – CW, 1 – CCW
30020	POWER KVA 1	kVA
30021	POWER KVA 2	kVA
30022	POWER KVA 3	kVA
30023	POWER KVAR 1	kVAR
30024	POWER KVAR 2	kVAR
30025	POWER KVAR 3	kVAR
30026	POWER KW 1	kW (1xxxxxxx) ₁₆ - means negative power
30027	POWER KW 2	
30028	POWER KW 3	
30029	CURRENT C1	CT SIZE L1L2L3 >100, A else 10*A
30030	CURRENT C2	
30031	CURRENT C3	
30032	POWER FACTOR 1	PF * 100
30033	POWER FACTOR 2	PF * 100
30034	POWER FACTOR 3	PF * 100
30035	POWER FACTOR TOTAL	PF * 100
30036	SPEED	RPM
30037	OIL PRESSURE	10 * BAR
30038	ALTERNATOR VOLTAGE	10 * V

30039	BATTERY VOLTAGE	10 * V
30040	COOLANT TEMPERATURE	°C+40
30041	AUXILIARY TEMPERATURE	°C
30042	OIL TEMPERATURE	°C+273
30043	-	-
30044	FUEL LEVEL	%
30045	HOUR COUNTER	h
30046	-	-
30047	-	-
30048	PUMP STATUS	0 – OFF, 1 - ON
30049	PER TEST REMAINING	h
30050	RENT REMAINING	h
30051	SERVICE REMAINING 1	h
30052	SERVICE REMAINING 2	h
30053	SERVICE REMAINING 3	h
30054	-	-
30055	TIME HOUR	-
30056	TIME MINUTE	-
30057	TIME SECOND	-
30058	DATE DAY	-
30059	DATE MONTH	-
30060	DATE YEAR	-
30061	POWER KVA TOTAL	kVA
30062	POWER KVAR TOTAL	kVAR
30063	POWER KW TOTAL	kW
30064	STARTING COUNTER	-
30065	-	-
30066	-	-
30067	-	-
30068	-	-
30069	-	-
30070	-	-
30071	ENERGY LOW WORD	kW/s
30072	ENERGY HIGH WORD	kW/s
30073	OPERATING MODE	0 – OFF, 1 - Manual, 2 – Auto, 3 - Test
30074	INPUT 1 (NO)	0 – OFF, 1 - ON
30075	INPUT 2 (NO)	0 – OFF, 1 - ON
30076	INPUT 3 (NO)	0 – OFF, 1 - ON
30077	INPUT 4 (NO)	0 – OFF, 1 - ON
30078	INPUT 5 (NO)	0 – OFF, 1 - ON
30079	INPUT ALARM 1 (NO)	0 – OFF, 1 - ON
30080	INPUT TEMP (NO)	0 – OFF, 1 - ON
30081	INPUT LOW FUEL LEVEL (NO)	0 – OFF, 1 - ON
30082	INPUT ALARM 2 (NO)	0 – OFF, 1 - ON

30083	INPUT OIL PRES (NO)	0 – OFF, 1 - ON
30084	RESISTOR OIL PRES	Ω
30085	RESISTOR FUEL	Ω
30086	RESISTOR COOLANT	Ω
30087	RESISTOR OIL TEMP	Ω
30088	RESISTOR CANOPY	Ω
30089	EARTH CURRENT	CT SIZE EARTH>100, A CT SIZE EARTH = 5, 100*A else 10*A
30090	TELECOM BATTERY	10 * V
30091	CAN RED LAMP	0 – OFF, 1 - ON
30092	CAN YELLOW LAMP	0 – OFF, 1 - ON
30093	VOLTAGE REFERENCE 2.5V	mV
30094	-	-
30095	GENERATOR SIMULATION	0 – OFF, 1 - ON
30096	BATTERY TYPE	0 – 24V, 1 – 12V
30097	SPEED HZ FROM TEETH	Hz
30098	EARTH CURRENT	CT SIZE EARTH>100, A CT SIZE EARTH = 5, 100*A else 10*A
30099	IDLE ENGINE STATUS	0 – OFF, 1 - ON
30100	-	
30101	-	
30102	-	
30103	-	
30104	-	
30105	-	
30106	-	
30107	ENGINE RUNNING STATUS	0 – OFF, 1 - ON
30108	LOCK BY USER PASSWORD	0 – OFF, 1 - ON
30109	LOCK BY OEM PASSWORD	0 – OFF, 1 - ON
30110	VERSION	
30111	CAN OIL TEMPERATURE	
30112	CAN OIL LEVEL	
30113	CAN TURBO PRESSURE	
30114	CAN WATER IN FUEL	
30115	CAN FUEL TEMPERATURE	
30116	CAN FUEL PRESSURE	
30117	CAN FUEL CONSUMPTION	
30118	CAN PEDAL POSITION	
30119	CAN CAMSHAFT	
30120	CAN FLYWELL	
30121	CAN FILTER BAR	
30122	CAN COOLANT TEMPERATURE	
30123	CAN COOLANT LEVEL	

30124	CAN COOLANT PRESSURE	
30125	CAN CRANKCASE PRESSURE	
30126	CAN BOOST	
30127	CAN MSR INTAKE BAR	
30128	CAN MSR OIL PRESSURE	
30129	CAN MSR SPEED	
30130	CAN_MSR_PREHEAT	
30131	CAN_MSR_RUNNING	
30132	CAN_MSR_BATTERY	
30133	CAN_MSR_BOOST_TEMPERATURE	
30134	CAN_MSR_AIR_INLET_PRESSURE	
30135	CAN_MSR_AIR_FILTER_DIF_PRESSURE	
30136	CAN_MSR_EXHAUST_TEMP	
30137	CAN_MSR_ENGINE_HOURS_LOW	
30138	CAN_MSR_ENGINE_HOURS_HIGH	
30139	ECU_ENABLE	
30140	MSR_TAD941_DEMANDED_TORQUE	
30141	MSR_TAD941_ACTUAL_TORQUE	
30142	MSR_TAD941_PERCENT_LOAD	
-	-	-
-	-	-
31000	OVER FREQUENCY	0 – OFF, 1 - ON
31001	ENGINE BELT BREAK	0 – OFF, 1 - ON
31002	REMOTE LOCK	0 – OFF, 1 - ON
31003	ALTERNATOR FAILURE	0 – OFF, 1 - ON
31004	OVERLOAD SHUTDOWN	0 – OFF, 1 - ON
31005	UNDER FREQUENCY	0 – OFF, 1 - ON
31006	FAIL TO STOP ALARM	0 – OFF, 1 - ON
31007	-	-
31008	FRONT PANEL EMERGENCY	0 – OFF, 1 - ON
31009	MAINTENANCE TIMER 1	0 – OFF, 1 - ON
31010	MAINTENANCE TIMER 2	0 – OFF, 1 - ON
31011	MAINTENANCE TIMER 3	0 – OFF, 1 - ON
31012	FAIL TO START	0 – OFF, 1 - ON
31013	TANK EMPTY SWITCH	0 – OFF, 1 - ON
31014	LOW FUEL WARNING	0 – OFF, 1 - ON
31015	HIGH FUEL WARNING	0 – OFF, 1 - ON
31016	TANK EMPTY SENDER	0 – OFF, 1 - ON
31017	LOW BATTERY WARNING	0 – OFF, 1 - ON
31018	HIGH BATTERY WARNING	0 – OFF, 1 - ON
31019	LOW OIL BAR SHUTDOWN	0 – OFF, 1 - ON
31020	LOW OIL BAR WARNING	0 – OFF, 1 - ON
31021	PRESSURE SENDER OPEN	0 – OFF, 1 - ON
31022	COOLANT SENDER OPEN	0 – OFF, 1 - ON
31023	OIL C SENDER OPEN	0 – OFF, 1 - ON

31024	AUX C SENDER OPEN	0 – OFF, 1 - ON
31025	OVER CURRENT SHUTDOWN	0 – OFF, 1 - ON
31026	OVER CURRENT WARNING	0 – OFF, 1 - ON
31027	OVER VOLTAGE	0 – OFF, 1 - ON
31028	UNDER VOLTAGE	0 – OFF, 1 - ON
31029	INPUT 1 WARNING	0 – OFF, 1 - ON
31030	INPUT 2 WARNING	0 – OFF, 1 - ON
31031	INPUT 3 WARNING	0 – OFF, 1 - ON
31032	INPUT 4 WARNING	0 – OFF, 1 - ON
31033	INPUT 5 WARNING	0 – OFF, 1 - ON
31034	RENTAL WARNING	0 – OFF, 1 - ON
31035	RENTAL EXPIRED	0 – OFF, 1 - ON
31036	PARAMETER ERROR	0 – OFF, 1 - ON
31037	OVER KVA SHUTDOWN	0 – OFF, 1 - ON
31038	AUTOMATIC TEST FAILED	0 – OFF, 1 - ON
31039	MEMORY ERROR	0 – OFF, 1 - ON
31040	OVER SPEED SHUTDOWN	0 – OFF, 1 - ON
31041	UNDER SPEED SHUTDOWN	0 – OFF, 1 - ON
31042	PICK UP ERROR	0 – OFF, 1 - ON
31043	PHASE SEQUENCE ERROR	0 – OFF, 1 - ON
31044	CLOCK ERROR	0 – OFF, 1 - ON
31045	CANBUS ERROR	0 – OFF, 1 - ON
31046	REVERSE POWER	0 – OFF, 1 - ON
31047	SHORT CIRCUIT	0 – OFF, 1 - ON
31048	ALARM 1 SHUTDOWN	0 – OFF, 1 - ON
31049	ALARM 2 SHUTDOWN	0 – OFF, 1 - ON
31050	INPUT 1 SHUTDOWN	0 – OFF, 1 - ON
31051	INPUT 2 SHUTDOWN	0 – OFF, 1 - ON
31052	INPUT 3 SHUTDOWN	0 – OFF, 1 - ON
31053	INPUT 4 SHUTDOWN	0 – OFF, 1 - ON
31054	INPUT 5 SHUTDOWN	0 – OFF, 1 - ON
31055	TEMPERATURE SWITCH	0 – OFF, 1 - ON
31056	COOLANT C SHUTDOWN	0 – OFF, 1 - ON
31057	HIGH COOLANT WARNING	0 – OFF, 1 - ON
31058	LOW COOLANT WARNING	0 – OFF, 1 - ON
31059	OIL C SHUTDOWN	0 – OFF, 1 - ON
31060	OIL C WARNING,	0 – OFF, 1 - ON
31061	AUX C SENDER SHUTDOWN	0 – OFF, 1 - ON
31062	AUX C WARNING	0 – OFF, 1 - ON
31063	FUEL RESERVE SENDER	0 – OFF, 1 - ON
31064	FUEL RESERVE SWITCH	0 – OFF, 1 - ON
31065	LOW OIL JF9 SHUTDOWN	0 – OFF, 1 - ON
31066	PUMP TIMEOUT WARNING	0 – OFF, 1 - ON
31067	EARTH FAILURE	0 – OFF, 1 - ON
31068	KM FAILURE	0 – OFF, 1 - ON

31069	KG FAILURE	0 – OFF, 1 - ON
31070	MAX RUN TIME	0 – OFF, 1 - ON
31071	PHASE UNBALANCE	0 – OFF, 1 - ON
31072	FUEL SENDER OPEN	0 – OFF, 1 - ON
31073	RED LAMP ALARM	0 – OFF, 1 - ON
31074	TELECOM V LOW	0 – OFF, 1 - ON
31075	TELECOM V HIGH	0 – OFF, 1 - ON
31076	ROOM C LOW	0 – OFF, 1 - ON
31077	ROOM C HIGH	0 – OFF, 1 - ON
31078	-	-
31079	COOLANT PRESSURE	0 – OFF, 1 - ON
31080	ACCELERATOR POSITION3	0 – OFF, 1 - ON
31081	ACCELERATOR POSITION2	0 – OFF, 1 - ON
31082	THROTTLE REDUNDANCY	0 – OFF, 1 - ON
31083	FUEL PRESSURE	0 – OFF, 1 - ON
31084	WATER IN FUEL SWITCH	0 – OFF, 1 - ON
31085	ENGINE OIL LEVEL	0 – OFF, 1 - ON
31086	OIL PRESSURE SENSOR	0 – OFF, 1 - ON
31087	BOOST PRESSURE SENSOR	0 – OFF, 1 - ON
31088	BOOST #c SENSOR	0 – OFF, 1 - ON
31089	BOOST BAR SENSOR	0 – OFF, 1 - ON
31090	AIR DIFERENTIAL BAR	0 – OFF, 1 - ON
31091	AMBIENT AIR SENSOR	0 – OFF, 1 - ON
31092	COOLANT #C SENSOR	0 – OFF, 1 - ON
31093	COOLANT LEVEL SWITCH	0 – OFF, 1 - ON
31094	CRANKCASE PRESSURE	0 – OFF, 1 - ON
31095	BATTERY VOLTAGE	0 – OFF, 1 - ON
31096	INJECTOR CONTROL BAR	0 – OFF, 1 - ON
31097	AMBIENT #C SENSOR	0 – OFF, 1 - ON
31098	EXHAUST #C SENSOR	0 – OFF, 1 - ON
31099	FUEL TEMPERATURE	0 – OFF, 1 - ON
31100	OIL #C SENSOR	0 – OFF, 1 - ON
31101	RATED ENGINE SPEED	0 – OFF, 1 - ON
31102	ENGINE SPEED	0 – OFF, 1 - ON
31103	J1939 BUS	0 – OFF, 1 - ON
31104	INJECTOR WIRING	0 – OFF, 1 - ON
31105	5V DC SUPPLY	0 – OFF, 1 - ON
31106	INLET AIR HEATER	0 – OFF, 1 - ON
31107	POWER SUPPLY	0 – OFF, 1 - ON
31108	J1587 BUS	0 – OFF, 1 - ON
31109	CONTROLLER ERROR	0 – OFF, 1 - ON
31110	ECU EEPROM	0 – OFF, 1 - ON
31111	FUEL SHUT OFF VALVE	0 – OFF, 1 - ON
31112	SPEED SENSOR CAM	0 – OFF, 1 - ON
31113	SPEED SENSOR FLYWHEEL	0 – OFF, 1 - ON

31114	J1939 BUS	0 – OFF, 1 - ON
31115	INJECTOR CYLINDER 1	0 – OFF, 1 - ON
31116	INJECTOR CYLINDER 2	0 – OFF, 1 - ON
31117	INJECTOR CYLINDER 3	0 – OFF, 1 - ON
31118	INJECTOR CYLINDER 4	0 – OFF, 1 - ON
31119	INJECTOR CYLINDER 5	0 – OFF, 1 - ON
31120	INJECTOR CYLINDER 6	0 – OFF, 1 - ON
31121	START MOTOR ACTUATOR	0 – OFF, 1 - ON
31122	KEY OFF INPUT SENSOR	0 – OFF, 1 - ON
31123	ENGINE DERATE SWITCH	0 – OFF, 1 - ON
31124	INJECTOR REGULATOR	0 – OFF, 1 - ON
31125	PREHEAT SENSE	0 – OFF, 1 - ON
31126	FUEL PUMP VALVE	0 – OFF, 1 - ON
31127	FUEL CONTROLLER	0 – OFF, 1 - ON
31128	FUEL PUMP SPEED	0 – OFF, 1 - ON
31129	SENSOR1 5VDC	0 – OFF, 1 - ON
31130	SENSOR2 5VDC	0 – OFF, 1 - ON
31131	ENGINE PROTECTION 1	0 – OFF, 1 - ON
31132	ENGINE PROTECTION 2	0 – OFF, 1 - ON
31133	ECU TEMPERATURE	0 – OFF, 1 - ON
31134	RAIL PRESSURE SYSTEM	0 – OFF, 1 - ON
31135	FUEL PUMP ASSEMBLY 1	0 – OFF, 1 - ON
31136	FUEL PUMP ASSEMBLY 2	0 – OFF, 1 - ON
31137	ECU MAIN RELAY	0 – OFF, 1 - ON
31138	ENGINE DERATE	0 – OFF, 1 - ON
31139	ENGINE START RELAY	0 – OFF, 1 - ON
31140	FUEL PUMP OR VALVE	0 – OFF, 1 - ON
31141	INTERNAL EGR STATUS	0 – OFF, 1 - ON
-		
32000	EVENT 1 ALARM CODE	*NOTE
32001	EVENT 1 DAY	
32002	EVENT 1 MONTH	
32003	EVENT 1 YEAR	
32004	EVENT 1 HOUR	
32005	EVENT 1 MINUTE	
32006	EVENT 1 SECOND	
32007	EVENT 2 ALARM CODE	*NOTE
32008	EVENT 2 DAY	
32009	EVENT 2 MONTH	
32010	EVENT 2 YEAR	
32011	EVENT 2 HOUR	
32012	EVENT 2 MINUTE	
32013	EVENT 2 SECOND	
.....
33463	EVENT 210 ALARM CODE	*NOTE

33464	EVENT 210 DAY	
33465	EVENT 210 MONTH	
33466	EVENT 210 YEAR	
33467	EVENT 210 HOUR	
33468	EVENT 210 MINUTE	
33469	EVENT 210 SECOND	

65535 – not available value

***Note** – Codes for events

OVER FREQUENCY	0
ENGINE BELT BREAK	1
REMOTE LOCK	2
ALTERNATOR FAILURE	3
OVERLOAD SHUTDOWN	4
UNDER FREQUENCY	5
FAIL TO STOP ALARM	6
-	7
FRONT PANEL EMERGENCY	8
MAINTENANCE TIMER 1	9
MAINTENANCE TIMER 2	10
MAINTENANCE TIMER 3	11
FAIL TO START	12
TANK EMPTY SWITCH	13
LOW FUEL WARNING	14
HIGH FUEL WARNING	15
TANK EMPTY SENDER	16
LOW BATTERY WARNING	17
HIGH BATTERY WARNING	18
LOW OIL BAR SHUTDOWN	19
LOW OIL BAR WARNING	20
PRESSURE SENDER OPEN	21
COOLANT SENDER OPEN	22
OIL C SENDER OPEN	23
AUX C SENDER OPEN	24
OVER CURRENT SHUTDOWN	25
OVER CURRENT WARNING	26
OVER VOLTAGE	27
UNDER VOLTAGE	28
INPUT 1 WARNING	29
INPUT 2 WARNING	30

INPUT 3 WARNING	31
INPUT 4 WARNING	32
INPUT 5 WARNING	33
RENTAL WARNING	34
RENTAL EXPIRED	35
PARAMETER ERROR	36
OVER KVA SHUTDOWN	37
AUTOMATIC TEST FAILED	38
MEMORY ERROR	39
OVER SPEED SHUTDOWN	40
UNDER SPEED SHUTDOWN	41
PICK UP ERROR	42
PHASE SEQUENCE ERROR	43
CLOCK ERROR	44
CANBUS ERROR	45
REVERSE POWER	46
SHORT CIRCUIT	47
ALARM 1 SHUTDOWN	48
ALARM 2 SHUTDOWN	49
INPUT 1 SHUTDOWN	50
INPUT 2 SHUTDOWN	51
INPUT 3 SHUTDOWN	52
INPUT 4 SHUTDOWN	53
INPUT 5 SHUTDOWN	54
TEMPERATURE SWITCH	55
COOLANT C SHUTDOWN	56
HIGH COOLANT WARNING	57
LOW COOLANT WARNING	58
OIL C SHUTDOWN	59
OIL C WARNING,	60
AUX C SENDER SHUTDOWN	61
AUX C WARNING	62
FUEL RESERVE SENDER	63
FUEL RESERVE SWITCH	64
LOW OIL JF9 SHUTDOWN	65
PUMP TIMEOUT WARNING	66
EARTH FAILURE	67
KM FAILURE	68
KG FAILURE	69
MAX RUN TIME	70
PHASE UNBALANCE	71
FUEL SENDER OPEN	72
RED LAMP ALARM	73
TELECOM V LOW	74
TELECOM V HIGH	75

ROOM C LOW	76
ROOM C HIGH	77
-	78
COOLANT PRESSURE	79
ACCELERATOR POSITION3	80
ACCELERATOR POSITION2	81
THROTTLE REDUNDANCY	82
FUEL PRESSURE	83
WATER IN FUEL SWITCH	84
ENGINE OIL LEVEL	85
OIL PRESSURE SENSOR	86
BOOST PRESSURE SENSOR	87
BOOST #c SENSOR	88
BOOST BAR SENSOR	89
AIR DIFERENTIAL BAR	90
AMBIENT AIR SENSOR	91
COOLANT #C SENSOR	92
COOLANT LEVEL SWITCH	93
CRANKCASE PRESSURE	94
BATTERY VOLTAGE	95
INJECTOR CONTROL BAR	96
AMBIENT #C SENSOR	97
EXHAUST #C SENSOR	98
FUEL TEMPERATURE	99
OIL #C SENSOR	100
RATED ENGINE SPEED	101
ENGINE SPEED	102
J1939 BUS	103
INJECTOR WIRING	104
5V DC SUPPLY	105
INLET AIR HEATER	106
POWER SUPPLY	107
J1587 BUS	108
CONTROLLER ERROR	109
ECU EEPROM	110
FUEL SHUT OFF VALVE	111
SPEED SENSOR CAM	112
SPEED SENSOR FLYWHEEL	113
J1939 BUS	114
INJECTOR CYLINDER 1	115
INJECTOR CYLINDER 2	116
INJECTOR CYLINDER 3	117
INJECTOR CYLINDER 4	118
INJECTOR CYLINDER 5	119
INJECTOR CYLINDER 6	120

START MOTOR ACTUATOR	121
KEY OFF INPUT SENSOR	122
ENGINE DERATE SWITCH	123
INJECTOR REGULATOR	124
PREHEAT SENSE	125
FUEL PUMP VALVE	126
FUEL CONTROLLER	127
FUEL PUMP SPEED	128
SENSOR1 5VDC	129
SENSOR2 5VDC	130
ENGINE PROTECTION 1	131
ENGINE PROTECTION 2	132
ECU TEMPERATURE	133
RAIL PRESSURE SYSTEM	134
FUEL PUMP ASSEMBLY 1	135
FUEL PUMP ASSEMBLY 2	136
ECU MAIN RELAY	137
ENGINE DERATE	138
ENGINE START RELAY	139
FUEL PUMP OR VALVE	140
INTERNAL EGR STATUS	141
EVENT MODE OFF	142
EVENT MODE MANUAL	143
EVENT MODE AUTO	144
EVENT MODE TEST	145
EVENT ENGINE ON	146
EVENT ENGINE OFF	147
EVENT KM OPEN	148
EVENT KM CLOSED	149
EVENT KG OPEN	150
EVENT KG CLOSED	151
NO EVENT	255