

Revision: 19.02.2015

# **AMF PANEL MODBUS PROTOCOL**

Revision: 19.02.2015

## 1.0 MODBUS general information

RS485 settings:

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](http://www.modbus.org)

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

Code(HEX)	Function
01h	Read Coil Status
02h	Read Input Status
03h	Read Holding Registers
04h	Read Input Registers
05h	Write Single Coil
06h	Write Single Register
0Fh	Write Multiple Coils
10	Write Multiple Registers

## 2.0 BEK3 MODBUS Holding Registers

Revision: 19.02.2015

<b>Register s Address</b>	<b>BEK3 Parameters</b>	<b>Min Value</b>	<b>Max Value</b>	<b>Notes</b>
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,

Revision: 19.02.2015

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				
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				
40063				
40064	HIGH OIL *C WARNING	1	250	Note 1,
40065	HIGH OIL *C SHUTDOWN	1	250	Note 1,
40066				
40067				
40068	HIGH COOLANT SHUTDOWN	1	250	Note 1,
40069	HIGH COOLANT *C WARNING	1	250	Note 1,
40070	LOW * COOLANT C WARNING	1	250	Note 1,
40071				
40072				
40073	HIGH AUX. SHUTDOWN	1	250	Note 1,
40074	HIGH AUX. WARNING	1	250	Note 1,
40075				
40076				
40077	ALARM BYPASS TIMER	2	99	

Revision: 19.02.2015

40078	FAIL TO STOP	0	1	Note 5,
40079	-	-	-	
40080	-	-	-	
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				
40087				
40088				
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				
40095				
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	65534	
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	-	-	-	-
40107	MAINTENANCE 1	1	9999	Note 1,
40108	MAINTENANCE 2	1	9999	Note 1,
40109	MAINTENANCE 3	1	9999	Note 1,
40110	MODBUS NODE	1	127	
40111				
40112				
40113				
40114				
40115				
40116				
40117	ENERGY COUNTER LOW B			
40118	ENERGY COUNTER HIGH B			

Revision: 19.02.2015

40119				
40120				
40121				
40122				
40123	CLOCK DAY	1	31	
40124	CLOCK MONTH	1	12	
40125	CLOCK YEAR	2000	2099	
40126	CLOCK HOUR	0	23	
40127	CLOCK MINUTE	0	59	
40128	SAVE CLOCK	0	1	Note 5,
40129	DATE FORMAT	0	1	Note 8,
40130				
40131				
40132				
40133				
40134				
40135				
40136				
40137	POINT 1 DEG.	0	250	
40138	POINT 1 OHM	0	1000	
40139	POINT 2 DEG.	0	250	
40140	POINT 2 OHM	0	1000	
40141	POINT 3 DEG.	0	250	
40142	POINT 3 OHM	0	1000	
40143	POINT 4 DEG.	0	250	
40144	POINT 4 OHM	0	1000	
40145	POINT 5 DEG.	0	250	
40146	POINT 5 OHM	0	1000	
40147	POINT 6 DEG.	0	250	
40148	POINT 6 OHM	0	1000	
40149	POINT 1 LEVEL	0	99	
40150	POINT 1 OHM	0	1000	
40151	POINT 2 LEVEL	0	99	
40152	POINT 2 OHM	0	1000	
40153	POINT 3 LEVEL	0	99	
40154	POINT 3 OHM	0	1000	
40155	POINT 4 LEVEL	0	99	
40156	POINT 4 OHM	0	1000	
40157	POINT 5 LEVEL	0	99	
40158	POINT 5 OHM	0	1000	
40159	POINT 6 LEVEL	0	99	
40160	POINT 6 OHM	0	1000	

Revision: 19.02.2015

40161	POINT 1 BAR	0	200	Note 4
40162	POINT 1 OHM	0	1000	
40163	POINT 2 BAR	0	200	Note 4
40164	POINT 2 OHM	0	1000	
40165	POINT 3 BAR	0	200	Note 4
40166	POINT 3 OHM	0	1000	
40167	POINT 4 BAR	0	200	Note 4
40168	POINT 4 OHM	0	1000	
40169	POINT 5 BAR	0	200	Note 4
40170	POINT 5 OHM	0	1000	
40171	POINT 6 BAR	0	200	Note 4
40172	POINT 6 OHM	0	1000	
40173	INPUT1 OPTION	0	35	
40174	INPUT1 POLARITY	0	1	Note 6,
40175	INPUT2 OPTION	0	35	
40176	INPUT2 POLARITY	0	1	Note 6,
40177	INPUT3 OPTION	0	35	
40178	INPUT3 POLARITY	0	1	Note 6,
40179				
40180				
40181				
40182				
40183				
40184				
40185	OUTPUT1	0	80	
40186	OUTPUT2	0	80	
40187	OUTPUT3	0	80	
40188				
40189				
40190	ENGINE TYPE	0	28	
40191				
40192				
40193				
40194				
40195	CONTRAST	0	15	
40196	LANGUAGE	0	4	Note 10,
40197				
40198				
40199				
40200				
40201				
40202				
40203				

Revision: 19.02.2015

40204					
40205					
40206					
40207					
40208					
40209					
40210					
40211					
40212					
40213					
40214					
40215					
40216	AMF MONDAY	ON	0	24	
40217	AMF MONDAY	OFF	0	24	
40218	AMF TUESDAY	ON	0	24	
40219	AMF TUESDAY	OFF	0	24	
40220	AMF WESDAY	ON	0	24	
40221	AMF WESDAY	OFF	0	24	
40222	AMF THURSDAY	ON	0	24	
40223	AMF THURSDAY	OFF	0	24	
40224	AMF FRIDAY	ON	0	24	
40225	AMF FRIDAY	OFF	0	24	
40226	AMF SATURDAY	ON	0	24	
40227	AMF SATURDAY	OFF	0	24	
40228	AMF SUNDAY	ON	0	24	
40229	AMF SUNDAY	OFF	0	24	
40230	TEST H MONDAY	START	0	24	24 - OFF
40231	TEST M MONDAY	START	0	59	
40232	TEST H MONDAY	STOP	0	24	24 - OFF
40233	TEST M MONDAY	STOP	0	59	
40234	TEST H TUESDAY	START	0	24	24 - OFF
40235	TEST M TUESDAY	START	0	59	
40236	TEST H TUESDAY	STOP	0	24	24 - OFF
40237	TEST M TUESDAY	STOP	0	59	
40238	TEST H WESDAY	START	0	24	24 - OFF
40239	TEST M WESDAY	START	0	59	
40240	TEST H WESDAY	STOP	0	24	24 - OFF
40241	TEST M WESDAY	STOP	0	59	
40242	TEST H THURSDAY	START	0	24	24 - OFF
40243	TEST M THURSDAY	START	0	59	
40244	TEST H THURSDAY	STOP	0	24	24 - OFF
40245	TEST M THURSDAY	STOP	0	59	
40246	TEST H FRIDAY	START	0	24	24 - OFF



Revision: 19.02.2015

40247	TEST M FRIDAY	START	0	59	
40248	TEST H FRIDAY	STOP	0	24	24 - OFF
40249	TEST M FRIDAY	STOP	0	59	
40250	TEST H SATURDAY	START	0	24	24 - OFF
40251	TEST M SATURDAY	START	0	59	
40252	TEST H SATURDAY	STOP	0	24	24 - OFF
40253	TEST M SATURDAY	STOP	0	59	
40254	TEST H SUNDAY	START	0	24	24 - OFF
40255	TEST M SUNDAY	START	0	59	
40256	TEST H SUNDAY	STOP	0	24	24 - OFF
40257	TEST M SUNDAY	STOP	0	59	

**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: ( hours \* 60 + 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).

Revision: 19.02.2015

**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: 0 – NO; 1 – 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 – ENGLISH; 1 – ITALIAN, 2 – SPANISH, 3 – FRENCH, 4 - GREEK

### 3.0 BEK3 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) <sub>16</sub> - means negative power
30027	POWER KW 2	
30028	POWER KW 3	
30029	CURRENT C1	CT SIZE L1L2L3 >500, 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

Revision: 19.02.2015

30035	POWER FACTOR TOTAL	PF * 100
30036	SPEED	RPM
30037	OIL PRESSURE	10 * BAR
30038	ALTERNATOR VOLTAGE	10 * V
30039	-	-
30040	COOLANT TEMPERATURE	°C(+40 if CAN)
30041	AUXILIARY TEMPERATURE	°C
30042	OIL TEMPERATURE	°C(+273 if CAN)
30043	ENGINE STATUS	0-NOT RUNNING 1-STOPPING 2-STARTING 3-COOLING 4-WARM UP 5-NOT USED 6,7,8-P0,P1,P2 9-RUNNING 10-IDLE SPEED 11-REMOTE TEST 12-RUN ON LOAD
30044	FUEL LEVEL	%
30045	HOUR COUNTER	H
30046	-	-
30047	-	-
30048	PUMP STATUS	0 – OFF, 1 - ON
30049	-	-
30050	RENT REMAINING	H
30051	SERVICE REMAINING 1	H
30052	SERVICE REMAINING 2	H
30053	SERVICE REMAINING 3	H
30054	DAY OF THE WEEK	0 – SUNDAY 1 - MONDAY ... 6 - SATURDAY
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	NUMBER OF START COUNTER	-

Revision: 19.02.2015

30065	-	-
30066	-	-
30067	-	-
30068	-	-
30069	-	-
30070	-	-
30071	ENERGY HIGH WORD	kW/s
30072	ENERGY LOW 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	-	-
30078	-	-
30079	-	-
30080	-	-
30081	-	-
30082	-	-
30083	-	-
30084		
30085		
30086		
30087		
30088		
30089	EARTH CURRENT	CT SIZE EARTH>100, A CT SIZE EARTH = 5, 100*A else 10*A
30090	-	-
30091	-	-
30092	-	-
30093		
30094	-	-
30095	GENERATOR SIMULATION	0 – OFF, 1 - ON
30096	BATTERY TYPE	0 – 24V, 1 – 12V
30097		
30098	EARTH CURRENT	CT SIZE EARTH>500, A CT SIZE EARTH = 5, 100*A else 10*A
30099	IDLE ENGINE STATUS	0 – OFF, 1 - ON
30100	-	-
30101	-	-
30102	-	-

Revision: 19.02.2015

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	X.XX
30111	OIL TEMPERATURE (CAN)	°C+273
30112	SPN 98 (OIL LEVEL)	%
30113	SPN 102 (TURBO BAR)	10 * BAR
30114	SPN 97 (WATER IN FUEL)	0-OFF, 1-ON
30115	SPN 174 (FUEL °C)	°C + 40
30116	SPN 94 (FUEL BAR)	10 * BAR
30117	SPN 183 (FUEL RATE)	%
30118	SPN 91 (PEDAL POSITION)	%
30119	-	
30120	-	
30121	-	
30122	COOLANT TEMPERATURE(CAN)	°C + 40
30123	SPN 11 (COOLANT LEVEL)	%
30124	SPN 109 (COOLANT BAR)	10 * BAR
30125	SPN 512 (CRANKCASE BAR)	10 * BAR
30126	SPN 107 (AIR FILTER BAR)	10 * BAR
30127	SPN 106 (INTAKE BAR)	10 * BAR
30128	OIL PRESSURE (CAN)	10 * BAR
30129	SPEED (CAN)	RPM
30130	-	
30131	-	
30132	-	
30133	SPN 105 (BOOST °C)	°C + 40
30134	BATTERY VOLTAGE	10 * V
30135	CURRENT SOURCE	0-OFF, 1-GEN, 2-MAINS
30136	SPN 173 (EXHAUST °C)	°C + 273
30137	ECU ENGINE HOURS LOW	
30138	ECU ENGINE HOURS HIGH	
30139	-	
30140	SPN 512 (DEMANDE TORQUE)	%
30141	SPN 513 (ACTUAL TORQUE)	%
30142	SPN 92 (LOAD)	%
30143	-	
30144	-	

Revision: 19.02.2015

31000	Alarms registers(first address)	
31001	...	
...		
31142		
32000	EVENT 1 ALARM CODE	*NOTE
32001	EVENT 1 YEAR	
32002	EVENT 1 MONTH	
32003	EVENT 1 DAY	
32004	EVENT 1 HOUR	
32005	EVENT 1 MINUTE	
32006	EVENT 1 SECOND	
32007	EVENT 2 ALARM CODE	*NOTE
32008	EVENT 2 YEAR	
32009	EVENT 2 MONTH	
32010	EVENT 2 DAY	
32011	EVENT 2 HOUR	
32012	EVENT 2 MINUTE	
32013	EVENT 2 SECOND	
.....	.....	.....
33393	EVENT 200 ALARM CODE	*NOTE
33394	EVENT 200 DAY	
33395	EVENT 200 MONTH	
33396	EVENT 200 YEAR	
33397	EVENT 200 HOUR	
33398	EVENT 200 MINUTE	
33399	EVENT 200 SECOND	

**65535** – not available value

**\*Note** – Codes for Alarms/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

Revision: 19.02.2015

-	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
-	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
-	32
-	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
CAN BUS ERROR	45
REVERSE POWER	46
SHORT CIRCUIT	47
-	48
-	49



Revision: 19.02.2015

INPUT 1 SHUTDOWN	50
INPUT 2 SHUTDOWN	51
INPUT 3 SHUTDOWN	52
-	53
-	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
-	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
-	74
-	75
-	76
-	77
-	78
SPN 20 WATER PRESSURE	79
SPN 28 ACCELERATOR	80
SPN 29 ACCELERATOR	81
SPN 91 THROTTLE	82
SPN 94 FUEL PRESSURE	83
SPN 97 WATER IN FUEL	84
SPN 98 OIL LEVEL	85
SPN 100 OIL SENSOR	86
SPN 102 BOOST SENSOR	87
SPN 105 BOOST SENSOR	88
SPN 106 BOOST SENSOR	89
SPN 107 AIR FILTER	90

Revision: 19.02.2015

SPN 108 AIR PRESSURE	91
SPN 110 COOLANT SENSOR	92
SPN 111 COOLANT SWITCH	93
SPN 153 CRANKCASE SENSOR	94
SPN 158 BATTERY VOLTAGE	95
SPN 164 INJECTOR BAR	96
SPN 172 AIR SENSOR	97
SPN 173 EXHAUST SENSOR	98
SPN 174 FUEL TEMPERATURE	99
SPN 175 OIL TEMPERATURE	100
SPN 189 SPEED	101
SPN 190 SPEED	102
SPN 608 BUS ERROR	103
SPN 611 INJECTOR ERROR	104
SPN 620 SUPPLY FAULT	105
SPN 626 INLET AIR	106
SPN 627 POWER SUPPLY	107
SPN 629 J1587 ERROR	108
SPN 629 CAN ERROR	109
SPN 630 ECU ERROR	110
SPN 632 FUEL VALVE	111
SPN 636 SPEED SENSOR	112
SPN 637 SPEED SENSOR	113
SPN 639 J1939 BUS	114
SPN 651 INJECTOR 1	115
SPN 652 INJECTOR 2	116
SPN 653 INJECTOR 3	117
SPN 654 INJECTOR 4	118
SPN 655 INJECTOR 5	119
SPN 656 INJECTOR 6	120
SPN 677 STARTER	121
SPN 970 KEY OFF	122
SPN 971 ENGINE DERATE	123
SPN 679 INJECTOR CONTROL	124
SPN 729 PREHEAT SENSE	125
SPN 1076 PUMP INJECTOR	126
SPN 1077 INJECTOR CONTROL	127
SPN 1078 PUMP SPEED	128
SPN 1079 SENSOR VDC	129
SPN 1080 SENSOR VDC	130

Revision: 19.02.2015

SPN 1109 SHUTDOWN	131
SPN 1110 SHUTDOWN	132
SPN 1136 ECU TEMPERATURE	133
SPN 1239 COMMON RAIL	134
SPN 1347 FUEL PUMP 1	135
SPN 1348 FUEL PUMP 1	136
SPN 1485 ECU RELAY	137
SPN 1569 ENGINE DERATE	138
SPN 1675 START RELAY	139
SPN 2000 PUMP OR VALVE	140
SPN 2791 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
<b>NO EVENT/ NO ALARM</b>	<b>255</b>

## 4.0 BEK3 MODBUS Coil Status:

PSW – Password protected commands

<b>Registers Address</b>	<b>Measurement Value</b>	<b>Description</b>
0	REMOTE START ENGINE	Start the engine in AUTO Mode without KG handler
1	REMOTE STOP	Stop Engine if started from MODBUS
2	REMOTE OFF	Force Mode OFF
3	REMOTE MANUAL (PSW)	Force Mode MANUAL
4	REMOTE AUTO	Force Mode AUTO
5	REMOTE TEST	Force Mode TEST
6	REMOTE KM	Close/Open KM in MANUAL Mode

Revision: 19.02.2015

7	REMOTE KG	Close/Open KG in MANUAL Mode
8	REMOTE OPEN	Open Contacts KG & KM
9	REMOTE ACK	Acknowledge Warnings Alarms
10	REMOTE UP	Simulate the UP button
11	REMOTE DOWN	Simulate the DOWN button
12	REMOTE LEFT	Simulate the LEFT button
13	REMOTE RIGHT	Simulate the RIGHT button
14		
15	REMOTE RESET (PSW)	Memory clear (factory defaults) only in OFF Mode
16	REMOTE CLEAR EVENTS (PSW)	Clear Events List
17	REMOTE CLEAR ENERGY (PSW)	Clear Energy Counter
18	REMOTE CLEAR START_COUNTER (PSW)	Clear Starts Counter
19	REMOTE CLEAR USER_PASSWORD (PSW)	Clear User Password
20	REMOTE CLEAR OEM_PASSWORD (PSW)	Clear OEM Password
21	REMOTE START GENERATOR	Start the engine in AUTO MODE with KG handler
22	REMOTE MAINS SIMULATED	Simulate the mains