FPC915

DIESEL ENGINE FIRE PUMP CONTROLLER

COMMUNICATION PROTOCOL
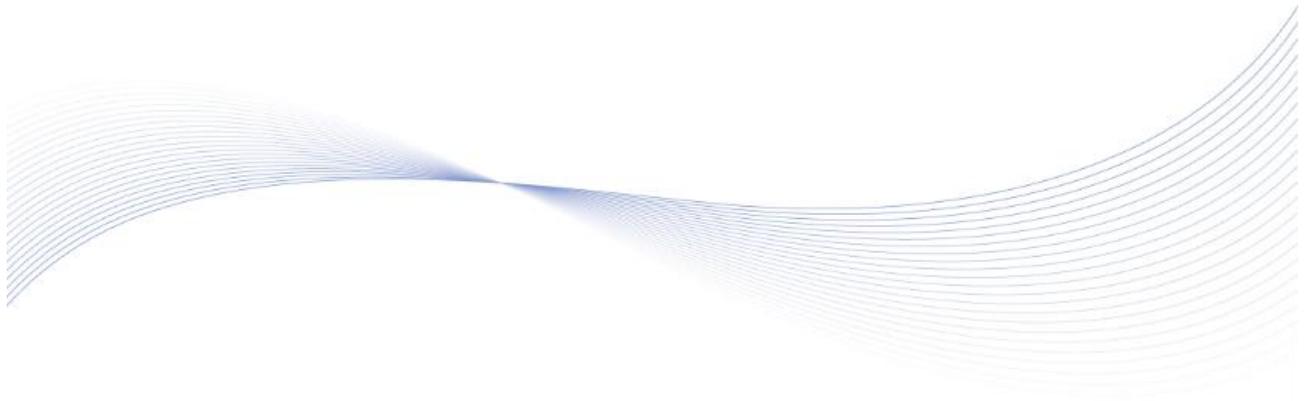
SmartGen

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Table 1 Software Version

Date	Version	Content
2015-12-09	1.0	Original release.
2024-06-25	1.1	Update to the latest template, and add new monitoring parameters.

CONTENT

1 INTRODUCTION

This protocol describes read and write command format of PC serial port and the definition of internal information data for the third-party to develop and use.

MODBUS communication protocol allows the module to transfer information and data effectively with PLC, RTU, SCADA system of international brands (such as, Schneider, Siemens, and Modicon), and DCS or third-party monitoring system compatible with MODBUS. The monitoring system can be set up if only adding central communication master software (such as Kingview，Intouch、FIX、Synal) basing on PC (or IPC).

2 MODBUS BASIC RULES

——All communication loops should follow the master-slave mode. If so, data can be transferred between a master (e.g. PC) and 32 slaves.

——The master will initialize all messages sent from communication coil of the device.

——No communication can start from slaves.

——In communication loop, all communication should be transmitted in "information frame".

——If received information frame contains unknown command, no response will be given.

3 DATA FRAME FORMAT

Communication is asynchronously transferred, using byte (data frame) as unit. Between master and slave, every transmitted data frame is 10-bit (1-bit stop bit) or 11-bit (2-bit stop bit) serial data stream.

Transmission baud rate is 9600.

Table 2 Data Frame Format

Item	Description
Start bit	1-bit
Data bit	8-bit
Parity bit	No parity
Stop bit	1-bit, 2-bit can be set.

3.1 FUNCTION CODE 01H MAPPING ALARM AND COIL STATUS OF DATA FIELD

EXAMPLE:

If the address of slave is 00 need to be read, so it needs to read 1CH (28 in decimal) coils, whose starting address is 00H.

Assuming the slave (controller) address is 01, the master/host (could be PC) request command is as following:

Table 3 Master (PC) Request Frame

Slave Address	Function Code	Start Address (00)		Request Data Length (28)		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	01	00	00	00	1C	3D	C3

The slave response is as following:

Table 4 Slave (Controller) Response Frame

Slave Address	Function Code	Data Length (Bytes)	Data				CRC 16	
			Data of Address 07-00	Data of Address 0F-08	Data of Address 17-10	Data of Address 1C-18	LSB	MSB
01	01	04	30	00	93	0A	18	26

The value of the coil 07-00 is 30H in hexadecimal, and 00110000 in binary. The coil 07 is the MSB of the byte, and 00 is the LSB of the byte. The status of the coil 07-00 is OFF－OFF－ON－ON－OFF－OFF－OFF－OFF.

3.2 FUNCTION CODE 03H AND 06H MAPPING PARAMETERS OF DATA FIELD

Function code 06H can only be written to address 0199-0210 and 0225-0231, other addresses cannot be written.

Table 5 Parameters of Data Field

Address	Item	Description	Bytes
0000	Common Alarm	1 for active (LSB)	1bit
	Common Shutdown Alarm	1 for active	1bit
	Common Warning Alarm	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Common Indication	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	System In Auto Mode	1 for active	1bit
	System In Manual Mode	1 for active	1bit
	System In Stop Mode	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved	(MSB)	1bit
0001	Emergency Stop Alarm	1 for active	1bit
	Overspeed Shutdown	1 for active	1bit
	Underspeed Shutdown	1 for active	1bit
	Loss of Speed Signal Alarm	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Failed to Start Alarm	1 for active	1bit
	Reserved		1bit

Address	Item	Description	Bytes
	Maintenance Time Due Shutdown	1 for active	1bit
	ECU Alarm Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	High Temperature Shutdown	1 for active	1bit
	Low Oil Pressure Shutdown	1 for active	1bit
0002	ECU Com Fail Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Temp Sensor Open Shutdown	1 for active	1bit
	High Temp Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Pressure Sensor Open	1 for active	1bit
	Reserved		1bit
	Low Oil Pressure Shutdown	1 for active	1bit
	Reserved		1bit
0003	Level Sensor Open Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Flexible Sensor 1 Open Shutdown	1 for active	1bit
	Flexible Sensor 1 High Shutdown	1 for active	1bit
	Flexible Sensor 1 Low Shutdown	1 for active	1bit
	Reserved		1bit
	Flexible Sensor 2 Open Shutdown	1 for active	1bit
	Flexible Sensor 2 High Shutdown	1 for active	1bit
	Flexible Sensor 2 Low Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
0004	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit

Address	Item	Description	Bytes
	Reserved		1bit
	Reserved		1bit
	Pipe Pressure Sensor Open Shutdown	1 for active	1bit
	Pipe Pressure Sensor High	1 for active	1bit
	Pipe Pressure Sensor Low	1 for active	1bit
	Reserved		1bit
	Outlet Pressure Open Shutdown	1 for active	1bit
	Outlet Pressure High Shutdown	1 for active	1bit
	Outlet Pressure Low Shutdown	1 for active	1bit
	Reserved		1bit
0005	Reserved		2Bytes
0006	Reserved		2Bytes
0007	Reserved		2Bytes
0008	Input 1 Shutdown	1 for active	1bit
	Input 2 Shutdown	1 for active	1bit
	Input 3 Shutdown	1 for active	1bit
	Input 4 Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	End of The Mandate	1 for active	1bit
	High Pressure Pump Overspeed Shutdown	1 for active	1bit
	High Pressure Pump Underspeed Shutdown	1 for active	1bit
	Over Flow Shutdown	1 for active	1bit
0009	Maintenance 1 Shutdown	1 for active	1bit
	Maintenance 2 Shutdown	1 for active	1bit
	Maintenance 3 Shutdown	1 for active	1bit
	Maintenance 4 Shutdown	1 for active	1bit
	Maintenance 5 Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit

Address	Item	Description	Bytes
	Reserved		1bit
0010	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Exp DOUT Com Fail Shutdown	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
0011	Reserved		2Bytes
0012	Reserved		2Bytes
0013	Reserved		2Bytes
0014	Reserved		2Bytes
0015	Reserved		2Bytes
0016	Reserved		2Bytes
0017	Reserved		2Bytes
0018	Reserved		2Bytes
0019	Reserved		2Bytes
0020	Over Speed Warning	1 for active	1bit
	Under Speed Warning	1 for active	1bit
	Loss Of Speed Signal Warning	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Fail to Stop Warning	1 for active	1bit
	Charge Alt Fail Warning	1 for active	1bit
	Battery1 Over Voltage Warning	1 for active	1bit
	Battery1 Under Voltage Warning	1 for active	1bit
	Maintenance Due Warning	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	ECU Warning	1 for active	1bit
0021	Reserved		1bit
	Reserved		1bit

Address	Item	Description	Bytes
	High Temp Input Warning	1 for active	1bit
	High OP Input Warning	1 for active	1bit
	Low Level Input Warning	1 for active	1bit
	High Level Input Warning	1 for active	1bit
	Low Pump Room Warning	1 for active	1bit
	Reserved	1 for active	1bit
	Temp Sensor Open	1 for active	1bit
	High Temp Warning	1 for active	1bit
	Low Temp Warning	1 for active	1bit
	Reserved		1bit
	Pressure Sensor Open	1 for active	1bit
	Reserved		1bit
	Low Oil Pressure Warning	1 for active	1bit
	Reserved		1bit
0022	Level Sensor Open Warning	1 for active	1bit
	Reserved		1bit
	Low Level Warning	1 for active	1bit
	Reserved		1bit
	Flexible Sensor 1 Open	1 for active	1bit
	Flexible Sensor 1 High	1 for active	1bit
	Flexible Sensor 1 Low	1 for active	1bit
	DC Over Voltage		1bit
	Flexible Sensor 2 Open	1 for active	1bit
	Flexible Sensor 2 High	1 for active	1bit
	Flexible Sensor 2 Low	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	DC Over Current		1bit
0023	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Pipe Pressure Sensor Open Warning		1bit
	Pipe Pressure Sensor High Warning		1bit
	Pipe Pressure Sensor Low Warning		1bit
	Reserved		1bit
	Outlet Pressure Open Warning		1bit
	Outlet Pressure High Warning		1bit

Address	Item	Description	Bytes
	Outlet Pressure Low Warning		1bit
	Reserved		1bit
0024	Reserved		2Bytes
0025	Reserved		2Bytes
0026	Reserved		2Bytes
0027	Reserved	1 for active	2Bytes
	Exp DI Com Fail Warning	1 for active	1bit
	Exp DOUT Com Fail Warning	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0028	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Charger 1 Mains Fail	1 for active	1bit
	Charger 2 Mains Fail	1 for active	1bit
	Charger 1 Comm. Fail	1 for active	1bit
	Charger 2 Comm. Fail	1 for active	1bit
	Charger 1 Charging Fail	1 for active	1bit
	Charger 2 Charging Fail	1 for active	1bit
	Over Flow Warning	1 for active	1bit
	Battery 2 High Voltage Warning	1 for active	1bit
	Battery 2 Low Voltage Warning	1 for active	1bit
	End of The Mandate	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved		2Bytes
0029	Input 1 Warning	1 for active	1bit
	Input 2 Warning	1 for active	1bit
	Input 3 Warning	1 for active	1bit
	Input 4 Warning	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit

Address	Item	Description	Bytes
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0030	Maintain 1 Warning	1 for active	1bit
	Maintain 2 Warning	1 for active	1bit
	Maintain 3 Warning	1 for active	1bit
	Maintain 4 Warning	1 for active	1bit
	Maintain 5 Warning	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0031	Alarm Stop Inhibit Indication	1 for active	1bit
	Maintenance Due Indication	1 for active	1bit
	During Inhibit Start Indication	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0032	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit

Address	Item	Description	Bytes
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Auto Mode Lock	1 for active	1bit
	Auto Mode Inhibit	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0033	Input 1 Indicate	1 for active	1bit
	Input 2 Indicate	1 for active	1bit
	Input 3 Indicate	1 for active	1bit
	Input 4 Indicate	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0034	Maintain 1 Indicate	1 for active	1bit
	Maintain 2 Indicate	1 for active	1bit
	Maintain 3 Indicate	1 for active	1bit
	Maintain 4 Indicate	1 for active	1bit
	Maintain 5 Indicate	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit

Address	Item	Description	Bytes
	Reserved	1 for active	1bit
0035	Emergency Input Port	1 for active	1bit
	Input 1 Status	1 for active	1bit
	Input 2 Status	1 for active	1bit
	Input 3 Status	1 for active	1bit
	Input 4 Status	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0036	Engine Running Input	1 for active	1bit
	Engine Overspeed Input	1 for active	1bit
	Low Oil Pressure Input	1 for active	1bit
	High Temp. Input	1 for active	1bit
	Low Fuel Level Input	1 for active	1bit
	High Fuel Level Input	1 for active	1bit
	Remote Auto Start Input	1 for active	1bit
	Remote Manual Start Input	1 for active	1bit
	Deluge Valve Start Input	1 for active	1bit
	Auto Status Input	1 for active	1bit
	Manual Status Input	1 for active	1bit
	Stop Status Input	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
	Reserved	1 for active	1bit
0037	Fuel Relay Output Status	1 for active	1bit
	Start 1 Relay Output Status	1 for active	1bit
	Start 2 Relay Output Status	1 for active	1bit
	Test Solenoid Valve Output Status	1 for active	1bit
	ETS Output Status	1 for active	1bit
	Relay Output 1 Status	1 for active	1bit
	Relay Output 2 Status	1 for active	1bit
	Relay Output 3 Status	1 for active	1bit
	Engine Fault Output Status	1 for active	1bit
	Engine Running Output Status	1 for active	1bit
	Pump Room Alarm Output Status	1 for active	1bit

Address	Item	Description	Bytes
	Controller Fault Output Status	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
0038	Exp. DOUT1 Output 1 Status	1 for active	1bit
	Exp. DOUT1 Output 2 Status	1 for active	1bit
	Exp. DOUT1 Output 3 Status	1 for active	1bit
	Exp. DOUT1 Output 4 Status	1 for active	1bit
	Exp. DOUT1 Output 5 Status	1 for active	1bit
	Exp. DOUT1 Output 6 Status	1 for active	1bit
	Exp. DOUT1 Output 7 Status	1 for active	1bit
	Exp. DOUT1 Output 8 Status	1 for active	1bit
	Exp. DOUT2 Output 1 Status	1 for active	1bit
	Exp. DOUT2 Output 2 Status	1 for active	1bit
	Exp. DOUT2 Output 3 Status	1 for active	1bit
	Exp. DOUT2 Output 4 Status	1 for active	1bit
	Exp. DOUT2 Output 5 Status	1 for active	1bit
	Exp. DOUT2 Output 6 Status	1 for active	1bit
	Exp. DOUT2 Output 7 Status	1 for active	1bit
	Exp. DOUT2 Output 8 Status	1 for active	1bit
0039	Reserved		2Bytes
0040	Reserved		2Bytes
0041	Reserved		2Bytes
0042	Reserved		1bit
	Exp. DOUT Com. Fail Status	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
0043	Reserved		2Bytes
0044	Reserved		2Bytes
0045	Input 1 Active	1 for active	1bit
	Input 2 Active	1 for active	1bit

Address	Item	Description	Bytes
	Input 3 Active	1 for active	1bit
	Input 4 Active	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
0046	Engine Running Input Active	1 for active	1bit
	Engine Overspeed Input Active	1 for active	1bit
	Low Oil Pressure Input Active	1 for active	1bit
	High Temp. Input Active	1 for active	1bit
	Low Fuel Level Input Active	1 for active	1bit
	High Fuel Level Input Active	1 for active	1bit
	Remote Auto Start Input Active	1 for active	1bit
	Remote Manual Start Input Active	1 for active	1bit
	Deluge Valve Start Input Active	1 for active	1bit
	Auto Status Input Active	1 for active	1bit
	Manual Status Input Active	1 for active	1bit
	Stop Status Input Active	1 for active	1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
	Reserved		1bit
0047 0134	Reserved		89Bytes
0135	Battery 1 Charging Current	Signed(*10)	2Bytes
0136	Battery 2 Charging Current	Signed(*10)	
0137	Reserved		
0138	Reserved		2Bytes
0139	Reserved		2Bytes
0140	Head	Signed	2Bytes
0141	Engine Speed	Signed	2Bytes
0142	Battery 1 Voltage	Signed(*10)	2Bytes
0143	Charger Voltage	Signed(*10)	2Bytes
0144	Reserved	Signed	2Bytes
0145	Battery 2 Voltage	Signed(*10)	2Bytes
0146	High Pressure Pump Flow (m^3/h)	Unsigned(*10)	2Bytes

Address	Item	Description	Bytes
0147	GOV Output Percentage	Signed(*10)	2Bytes
0148	Temp. Sensor Resistance/Current	Unsigned(*10)	2Bytes
0149	Temp. Sensor Value	Signed	2Bytes
0150	Pressure Sensor Resistance/Current	Unsigned(*10)	2Bytes
0151	Pressure Sensor Value	Signed	2Bytes
0152	Fuel Level Sensor Resistance/Current	Unsigned(*10)	2Bytes
0153	Fuel Level Sensor Value	Signed	2Bytes
0154	Flexible Sensor 1 Resistance/Current	Unsigned(*10)	2Bytes
0155	Flexible Sensor 1 Value	Signed	2Bytes
0156	Flexible Sensor 2 Resistance/Current	Unsigned(*10)	2Bytes
0157	Flexible Sensor 2 Value	Signed	2Bytes
0158	Reserved		2Bytes
0159	Reserved		2Bytes
0160	Reserved		2Bytes
0161	Reserved		2Bytes
0162	Coolant Level	Signed	2Bytes
0163	Engine Oil Temp.	Signed	2Bytes
0164	Coolant Pressure	Signed	2Bytes
0165	Fuel Pressure	Signed	2Bytes
0166	Fuel Temp.	Signed	2Bytes
0167	Air Inlet Temp.	Signed	2Bytes
0168	Air Outlet Temp.	Signed	2Bytes
0169	Turbine Pressure	Signed	2Bytes
0170	Fuel Consumption	Signed	2Bytes
0171 0172	Total Fuel Consumption	Signed	4Bytes
0173	Reserved	Unsigned(*10)	2Bytes
0174	Reserved	Signed	2Bytes
0175	Pipe Pressure Sensor Resistance/Current	Unsigned (*10)	2Bytes
0176	Pipe Pressure Sensor Value	Signed (*10)	2Bytes
0177	Outlet Pressure Resistance/Current	Unsigned (*10)	2Bytes
0178	Outlet Pressure Value	Signed	2Bytes
0179	Reserved		2Bytes
0180	Reserved		2Bytes
0181	Reserved		2Bytes
0182	Reserved		2Bytes
0183	Reserved		2Bytes
0184	Reserved		2Bytes
0185	Reserved		2Bytes
0186	Reserved		2Bytes
0187	Reserved		2Bytes
0188	Reserved		
0189	Generator Status	GENERATOR STATUS	2Bytes
0190	Gen Delay Value	Signed	2Bytes

Address	Item	Description	Bytes
0191	Remote Start Status	REMOTE START STATUS	2Bytes
0192	Remote Start Delay	Signed	2Bytes
0193	Reserved		2Bytes
0194	Reserved		2Bytes
0195	Reserved		2Bytes
0196	Reserved		2Bytes
0197	Reserved		2Bytes
0198	Reserved		2Bytes
0199	Total Running Hours	Unsigned	2Bytes
0200	Total Running Minutes	Unsigned	2Bytes
0201	Total Running Seconds	Unsigned	2Bytes
0202	Total Start Attempts	Unsigned	2Bytes
0203 0204	Total Flow m^3	Unsigned	4Bytes
0205	Reserved		2Bytes
0206	Reserved		2Bytes
0207	Reserved		2Bytes
0208	Reserved		2Bytes
0209	Reserved		2Bytes
0210	Reserved		2Bytes
0211	Maintenance 1 Remaining Hours		2Bytes
0212	Maintenance 1 Remaining Minutes		2Bytes
0213	Maintenance 1 Remaining Seconds		2Bytes
0214	Reserved		2Bytes
0215	Reserved		2Bytes
0216	Reserved		2Bytes
0217	Controller Model		2Bytes
0218	Controller Software Version	Signed(*10)	2Bytes
0219	Controller Hardware Version	Signed(*10)	2Bytes
0220	Controller Release Time (Year)	Only reserve last two numbers of the year	2Bytes
0221	Controller Release Time (Month)	Signed	2Bytes
0222	Controller Release Time (Day)	Signed	2Bytes
0223	Reserved		2Bytes
0224	Reserved		2Bytes
0225	Controller Time (Year)	Only reserve last two numbers of the year	2Bytes
0226	Controller Time (Month)	Signed	2Bytes
0227	Controller Time (Day)	Signed	2Bytes
0228	Controller Time (Week)	Signed	2Bytes
0229	Controller Time (Hour)	Signed	2Bytes
0230	Controller Time (Minute)	Signed	2Bytes
0231	Controller Time (Second)	Signed	2Bytes
0232	Reserved		52Bytes

Address	Item	Description	Bytes
0257			
0258	Maintenance 2 Remaining Hours	Unsigned	2Bytes
0259	Maintenance 2 Remaining Minutes	Unsigned	2Bytes
0260	Maintenance 2 Remaining Seconds	Unsigned	2Bytes
0261	Maintenance 3 Remaining Hours	Unsigned	2Bytes
0262	Maintenance 3 Remaining Minutes	Unsigned	2Bytes
0263	Maintenance 3 Remaining Seconds	Unsigned	2Bytes
0264	Maintenance 4 Remaining Hours	Unsigned	2Bytes
0265	Maintenance 4 Remaining Minutes	Unsigned	2Bytes
0266	Maintenance 4 Remaining Seconds	Unsigned	2Bytes
0267	Maintenance 5 Remaining Hours	Unsigned	2Bytes
0268	Maintenance 5 Remaining Minutes	Unsigned	2Bytes
0269	Maintenance 5 Remaining Seconds	Unsigned	2Bytes
0270	User Total Running Hours A	Unsigned	2Bytes
0271	User Total Running Minutes A	Unsigned	2Bytes
0272	User Total Running Seconds A	Unsigned	2Bytes
0273	User Total Running Starts A	Unsigned	2Bytes
0274	Reserved	Unsigned	2Bytes
0275	Reserved	Unsigned	2Bytes
0276	User Total Running Hours B	Unsigned	2Bytes
0277	User Total Running Minutes B	Unsigned	2Bytes
0278	User Total Running Seconds B	Unsigned	2Bytes
0279	User Total Running Starts B	Unsigned	2Bytes
0280	Reserved	Unsigned	2Bytes
0281	Reserved	Unsigned	2Bytes
0282	Gear 1 Total Running Hours	Unsigned	2Bytes
0283	Gear 1 Total Running Minutes	Unsigned	2Bytes
0284	Gear 1 Total Running Seconds	Unsigned	2Bytes
0285	Gear 2 Total Running Hours	Unsigned	2Bytes
0286	Gear 2 Total Running Minutes	Unsigned	2Bytes
0287	Gear 2 Total Running Seconds	Unsigned	2Bytes
0288	Gear 3 Total Running Hours	Unsigned	2Bytes
0289	Gear 3 Total Running Minutes	Unsigned	2Bytes
0290	Gear 3 Total Running Seconds	Unsigned	2Bytes
0291	Gear 4 Total Running Hours	Unsigned	2Bytes
0292	Gear 4 Total Running Minutes	Unsigned	2Bytes
0293	Gear 4 Total Running Seconds	Unsigned	2Bytes
0294	Reserved		2Bytes
0295	Reserved		2Bytes
0296	Reserved		2Bytes
0297	Reserved		2Bytes
0298	Reserved		2Bytes
0299	Reserved		2Bytes
0300	Shutdown SPN (LSB, 16-bit)	Unsigned	2Bytes

Address	Item	Description	Bytes
0301	Shutdown SPN (MSB, 16-bit)	Unsigned	2Bytes
0302	Shutdown FMI	Unsigned	2Bytes
0303	Warning SPN (LSB, 16-bit)	Unsigned	2Bytes
0304	Warning SPN (MSB, 16-bit)	Unsigned	2Bytes
0305	Warning FMI	Unsigned	2Bytes

EXAMPLE:

If "Shutdown SPN (SPN is 0001)" needs to be read, check the table above and find its address is 300 and 301, so it needs to read two bytes of data.

Assuming the slave address is 01, the master request command is as following:

Table 6 Master Request Command

Slave Address	Function Code	Start Address (300)		Request Data Length (2)		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	03	01	2C	00	02	04	3E

The slave response command is as following:

Table 7 Slave Response Command

Slave Address	Function Code	Data Length (Bytes)	Data				CRC 16	
			Data of Address 300 MSB	Data of Address 300 LSB	Data of Address 301 MSB	Data of Address 301 LSB	LSB	MSB
01	03	04	00	01	00	00	AB	F3

Fill the data received into the address respectively, as shown in the table below.

Table 8 Data Analysis

Address	Data Received (Hex)	Data Combined (Hex)	Shutdown SPN (Decimal)
300	0001H	00000001H	1
301	0000H		

3.3 FUNCTION CODE 05H MAPPING REMOTE COIL FIELD

Table 9 Remote Coil Field

Address	Item	Description
0000	Remote Start A Key	1 for active
0001	Remote Stop Key	1 for active
0002	Remote Test-run Key	1 for active
0003	Remote Auto Key	1 for active
0004	Remote Manual Key	1 for active
0005	Reserved	1 for active
0006	Load Control	1 for active
0007	Remote Up Key	1 for active
0008	Remote Down Key	1 for active

Address	Item	Description
0009	Remote Left Key	1 for active
0010	Remote Right Key	1 for active
0011	Remote Confirm Key/Page Key	1 for active
0012	Remote Mute Key	1 for active
0013	Remote Start B Key	1 for active
0014	Reserved	1 for active
0015	Reserved	1 for active
0016	Reserved	1 for active
0017	Inhibit Alarm Shutdown Mode (Battle Mode)	1 for active
0018	Reserved	1 for active
0019	Reserved	1 for active
0020	Remote Output Port 1 Output	1 for active, 0 for inactive
0021	Remote Output Port 2 Output	1 for active, 0 for inactive
0022	Remote Output Port 3 Output	1 for active, 0 for inactive
0023	Reserved	
0024	Reserved	
0025	Reserved	
0026	Reserved	
0027	Reserved	
0028	Reserved	
0029	Reserved	
0030	Reserved	
0031	Reserved	
0032	Reserved	Reserved
0033	Clear Total Flow	1 for active

NOTE: The remote command in the table above only needs to be sent once.

EXAMPLE:

If the controller is going to clear total flow remotely, check the table above first and find its remote address is 33.

Assuming the slave address is 01, the master request command is as following:

Table 10 Master Request Command

Slave Address	Function Code	Remote Address (33)		Remote Data		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	05	00	1E	00	01	6C	0C

The slave response command is as following:

Table 11 Slave Response Command

Slave Address	Function Code	Remote Address (33)		Remote Data		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	05	00	1E	00	01	6C	0C

3.4 GENERATOR STATUS

Table 12 Generator Status

No.	Content	Description
0	Standby	There is no delay value in this status
1	Pre-heat	
2	Fuel Output	There is no delay value in this status
3	Crank	
4	Crank Rest	
5	Safety On Delay	
6	Start Idle	
7	Warming Up	
8	Waiting for Load	There is no delay value in this status
9	Normal Running	There is no delay value in this status
10	Cooling	
11	Stop Idle	
12	Energize to Stop	
13	Wait for Stop	
14	After Stop	
15	Failed to Stop	There is no delay value in this status

3.5 REMOTE START STATUS

Table 13 Remote Start Status

No.	Content	Description
0	Without Delay	There is no delay value in this status
1	Start Delay	
2	Stop Delay	

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