



SmartGen
ideas for power

FPC615

**FIRE PUMP UNIT CONTROLLER
COMMUNICATION PROTOCOL**

SmartGen

SMARTGEN (ZHENGZHOU) TECHNOLOGY CO., LTD.



Chinese trademark

SmartGen English trademark

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Table 1 - Software Version

Date	Version	Note
2019-10-21	1.0	Original release.

This protocol is only suitable for FPC615 Fire Pump Controller.

Table 2 - Symbol Instruction

Symbol	Instruction
 NOTE	Highlights an essential element of a procedure to ensure correctness.
 CAUTION	Indicates a procedure or practice, which, if not strictly observed, could result in damage or destruction of equipment.
 WARNING	Indicates a procedure or practice, which could result in injury to personnel or loss of life if not followed correctly.

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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 etc.), and DCS or third-party monitoring system which is compatible with MODBUS. The monitoring system can be set up if a central PC (or IPC)-based communication master software is added (such as Kingview, Intouch, FIX, Synall etc.).

2. MODBUS BASIC RULES

- All communication loops should follow the master-slave mode. In this way, data can be transferred between a master (e.g. PC) and 32 slaves.
- No communication can start from slaves.
- In communication loop, all communication should be transmitted in “information frame”.
- If master or slave receives information frame with unknown command, no response will be given.

3. DATA FRAME FORMAT

Communication is asynchronously transferred by the unit of byte (data frame). Each data frame is a serial data stream of 10 bits (stop bit: 1) or 11 bits (stop bit: 2) between master and slave.

Table 3 - 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.
Baud rate	9600bps

4. COMMUNICATION PROTOCOL

4.1 ILLUSTRATION

When communication command is sent to the instrument, device who accords with the address code receives the communication command, and removes the address code to read information. If nothing goes wrong, it shall conduct the task, and then send implementation result to the sender. The returned information includes address code, function code of implemented action, data after implemented action, and CRC. If an error occurs, then nothing shall be sent.

4.2 INFORMATION FRAME FORMAT

Table 4 – Information Frame Format

Initiating structure	Address code	Function code	Data field	CRC	End structure
Delay (equivalent to 4 bytes)	1 byte 8-bit	1 byte 8-bit	N bytes N*8-bit	2 bytes 16-bit	Delay (equivalent to 4 bytes)

4.3 ADDRESS CODE

Address code is the first data frame (8-bit) in each transmitted information frame (from 0-255). Single device address range is 1–255, which means that slave device whose address code is defined by users will receive the information sent by the master. Each slave has a unique address code, and each response begins with its address code. The address code issued by the master means the slave address to be sent to, while address code issued by slave means the responded slave address.

4.4 FUNCTION CODE

4.4.1 ILLUSTRATION

Function code is the second data of each communication transmission. ModBus communication protocol defines function code as 1-255 (01H-0FFH). FPC615 controller uses a part of it. By master request master can tell slave to conduct certain action. By slave response slave can show that it has responded to the master and conducted the action as the function code issued by the slave is the same as the one issued by the master. If the function code MSB is 1 (function code > 127), it means slave does not respond, or response has an error.

The following table shows the specific signification and operation of function code.

Table 5 - ModBus Partial Function Codes

Function code	Definition	Operation
03H	Read Holding Registers	Reads single or multiple register data;
05H	Force Single Coil	Forces a single coil;
06H	Write Single Register	Write a 16-bit binary number to register;

4.4.2 03H READ REGISTERS

With communication command of function code 03H, master can read the numerical registers (all kinds of collected analogue data and pre-set parameter values are stored in the register) inside the instrument. Input register value of 03H mapping data field is 16-bit (2 bytes). So register values read from the instrument are all 2 bytes. For each time maximum readable register values are 125.

Command format of slave response is address code, function code, data field, and CRC code. Data in data field are dual bytes in a group of 2 bytes and high byte is in the front.

4.4.3 05H FORCE SINGLE COIL

With this command master can store single coil data to bit registers (e.g. ATS transfer control). Slave also can respond information to the master with this command.

4.4.4 06H WRITE SINGLE REGISTER

With this command master can store single data to bit registers in the instrument. Register in ModBus communication protocol refers to 16-bit (2 bytes) and high byte is in the front. In this way all points in the device are 2 bytes. Command format is slave address, function code, data field and CRC code.

4.5 DATA FIELD

4.5.1 ILLUSTRATION

Data field varies with different function codes.

4.5.2 FUNCTION 03H DATA FIELD FORMAT

Table 6 - Master Request

Data Sequence	Data Signification	Byte Count
1	Starting address	2
2	Read register numbers	2

Table 7 - Slave Response

Data Sequence	Data Signification	Byte Count
1	Loopback byte count	1
2	N register data	N

4.5.3 FUNCTION 05H DATA FIELD FORMAT

Table 8 - Master Request

Data Sequence	Data Signification	Byte Count
1	Coil address	2
2	Force single coil value	2

Table 9 - Slave Response

Data Sequence	Data Signification	Byte Count
1	Coil address	2
2	Single coil value	2

4.5.4 FUNCTION 06H DATA FIELD FORMAT

Table 10 - Master Request

Data Sequence	Data Signification	Byte Count
1	Register address	2
2	Register value (2 bytes)	2

Table 11 - Slave Response

Data Sequence	Data Signification	Byte Count
1	Register address	2
2	Register value (2 bytes)	2

4.6 ERROR CHECK CODE (CRC)

Master or slave can detect whether the received information is wrong or not with CRC. Sometimes due to electric noise or other interference, information will have small change in the transmission process. CRC ensures master or slave does not respond to the wrong information in the transmission process. In this way system safety and efficiency are guaranteed. CRC applies CRC-16 calibration method.

For 2 bytes CRC, low byte is in the front and high byte is in the back.

NOTE: All information frame format are same: address code, function code, data area and CRC code.

CRC includes 2 bytes, which is 16-bit binary number. CRC is counted by the sender and placed at the end of the transmitted information. Responded device will count the received information is the same as the information again. If they are different, then it means there is an error.

CRC counting method: first place 16-bit register as 1. Then gradually tackle with 8-bit data information. Only 8-bit of data is used in the process of CRC counting. Start bit and stop bit are not included.

In the process of CRC counting, 8-bit data is Exclusive OR with the register data. The obtained result moves 1 bit to the low byte direction and fill MSB with 0. Check LSB again and if LSB is 1, then make register contents Exclusive OR with the preset values. If LSB is 0, then do not do Exclusive OR counting.

This process is repeated for many times. After the eighth bit move, the next 8-bit shall Exclusive OR with the current register contents. This also repeated for 8 times as the last one. Until all data information is handled, the last register contents are CRC value.

CRC-16 CALCULATION PROCEDURE:

- 1) Place a 16-bit register as FFFF hex;
- 2) Make the first 8-bit data Exclusive OR with the low 8-bit of the CRC register, and put the result in the CRC register;
- 3) Shift the CRC register one bit to the right, and fill MSB with 0. Examine the moved-out bit.
- 4) If LSB was 0: repeat Step 3 (another shift).
If LSB was 1: Exclusive OR the CRC register with A001 hex;
- 5) Repeat Step 3 and 4 until 8 shifts have been performed. When this is done, a complete 8-bit data are processed.
- 6) Repeat Step 2 to 5 for the next 8-bit data of the message.
- 7) The final CRC register value is the CRC code. Least Significant Byte is transmitted first and Most Significant Byte is at the last.

NOTE: The calculation of CRC code starts from <slave address> for all bytes, excluding <CRC code>.

4.7 EXAMPLES OF INFORMATION FRAME FORMAT

4.7.1 FUNCTION CODE 03H

Slave address is 00 and start address is 0026H of 3 data (each data is 2 bytes).

Table 12 - Data Address Example

Address	Data(Hex)
0026H	0014
0027H	0014
0028H	0005

Table 13 - Function Code 03H Master Request Example

Request	Bytes	Example (Hex)
Slave address	1	01 Send to slave 01
Function code	1	03 Read holding registers
Starting address	2	00 Starting address is 0026 26
Count number	2	00 Read 3 data (total 6 bytes) 03
CRC code	2	E4 CRC code which calculated by PC 00

Table 14 - Function Code 03H Slave Response Example

Response	Bytes	Example (Hex)
Slave address	1	01 Respond slave address 01
Function code	1	03 Read register
Read count	1	06 3 data (total 6 bytes)
Data 1	2	00 The content of address 0026H 14
Data 2	2	00 The content of address 0027H 14
Data 3	2	00 The content of address 0028H 05
CRC code	2	91 CRC code which calculated by slave. 71

4.7.2 FUNCTION CODE 05H

Slave address is 01 and starting address is 000H of 1 coil. Place 000H unit 1.

Table 15 - Coil Data Address Example

Address	Data(Hex)
0000	0
0001	1
0002	0

NOTE: FF00 hex coil value is forced to 1 and 000H is forced to 0. Other values are illegal and will not affect the coil.

Table 16 - Function Code 05H Master Request Example

Request	Bytes	Example (Hex)
Slave address	1	01 Send slave address 01
Function code	1	05 Force single coil
Starting address	2	00 Starting address is 0000H 00
Data	2	FF Set coil as 1 00
CRC code	2	CD CRC code which calculated by PC. FB

Table 17 - Function Code 05H Slave Response Example

Slave Response	Bytes	For Example (Hex)
Slave address	1	01 Respond slave address 01
Function code	1	05 Force single coil
Starting address	2	00 Starting address is 0000H 00
Data	2	FF Set coil as 1 00
CRC code	2	CD CRC code which calculated by slave. FB

4.7.3 Function Code 06H

Slave address is 01 and place starting address of 00E3H of 1 point as 0002H.

Table 18 - Function Code 06H Master Request Example

Request	Bytes	Example (Hex)
Slave address	1	01 Send slave address 01
Function code	1	06 Write single register
Starting address	2	00 Starting address is 00E3H E3
Data	2	00 Place 1 datum (2 bytes in total) 02
CRC code	2	F9 CRC code which calculated by PC. FD

Table 19 - Function Code 06H Slave Response Example

Slave Response	Bytes	For Example (Hex)
Slave address	1	01 Respond slave address 01
Function code	1	06 Force single register
Starting address	2	00 Starting address is 00E3H E3
Data	2	00 Place 1 datum (2 bytes in total) 02
CRC code	2	F9 CRC code which calculated by slave. FD

4.8 ERROR HANDLING

When device detects other errors except the CRC code, the slave must send information to the master. The function code MSB is 1, which means the response function code by slave should add 128 based on the function code sent by the master. The following codes show that unexpected errors have occurred.

If CRC error occurs for the information received by the slave, then the device will ignore.

Table 20 - Error Code Format of Slave Response (CRC excluded):

Type	Byte
Address code	1 byte
Function code	1 byte (MSB is 1)
Error code	1 byte
CRC code	2 bytes

Error code:

01 illegal function code

The function code received in the query is not an allowable action for the slave.

02 illegal data address

The data address received in the query is not an allowable address for the slave.

03 illegal data value

A value contained in the query data field is not an allowable value for the slave.

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
					(MSB)		
0002	Reserved				1 for active (LSB)	1bit	
	Original High Temp. Shutdown				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	
	Temp Sensor Open Shutdown				1 for active	1bit	
	High Temp Shutdown				1 for active	1bit	
	Low Temp Shutdown				1 for active	1bit	
	Reserved				1 for active	1bit	
	Original Temp Sensor Open Shutdown				1 for active	1bit	
	Original High Temp Shutdown				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active (MSB)	1bit	
0003	Oil Press Sensor Open Shutdown				1 for active (LSB)	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	
	Reserved				1 for active (MSB)	1bit	
0004	Reserved					2Bytes	
0005	Reserved					2Bytes	

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
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 (LSB)	1bit	
	Under Speed Warning				1 for active	1bit	
	Loss of Speed Signal 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	
	Failed to Stop Warning				1 for active	1bit	
	Charge Alt Fail Warning				1 for active	1bit	
	Battery 1 Overvoltage Warning				1 for active	1bit	
	Battery 1 Undervoltage Warning				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active (MSB)	1bit	
0021	Reserved				1 for active (LSB)	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	
	Temp Sensor Open Warning				1 for active	1bit	
	High Temp Warning				1 for active	1bit	
	Low Temp Warning				1 for active	1bit	
	Reserved				1 for active	1bit	
	Original Temp Sensor				1 for active	1bit	

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
	Open Warning						
	Original High Temp Warning				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active (MSB)	1bit	
0022	Oil Press Sensor Open Warning				1 for active (LSB)	1bit	
	Reserved				1 for active	1bit	
	Low Oil Press 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 (MSB)	1bit	
0023	Reserved					2Bytes	
0024	Reserved					2Bytes	
0025	Reserved					2Bytes	
0026	Reserved					2Bytes	
0027	Reserved					2Bytes	
0028	Reserved				1 for active (LSB)	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	
	Battery 2 Over Volt Warning				1 for active	1bit	
	Battery 2 Under Volt Warning				1 for active	1bit	

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active (MSB)	1bit	
0029	Input 1 Warning				1 for active (LSB)	1bit	
	Input 2 Warning				1 for active	1bit	
	Input 3 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	
	Reserved				1 for active (MSB)	1bit	
0030	Input 1 Warning				1 for active (LSB)	1bit	
	Input 2 Warning				1 for active	1bit	
	Input 3 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	
	Reserved				1 for active	1bit	
	Reserved				1 for active (MSB)	1bit	
0031	Reserved					2Bytes	

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
0032	Reserved					2Bytes	
0033	Reserved					2Bytes	
0034	Reserved					2Bytes	
0035	Reserved				1 for active (LSB)	1bit	
	Input 1 Status				1 for active	1bit	
	Input 2 Status				1 for active	1bit	
	Input 3 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	
	Reserved				1 for active	1bit	
	Reserved				1 for active (MSB)	1bit	
0036	Reserved					2Bytes	
0037	Starter 1 Output				1 for active(LSB)	1bit	
	Starter 2 Output				1 for active	1bit	
	Stop Output				1 for active	1bit	
	Running Output				1 for active	1bit	
	Over Speed Output				1 for active	1bit	
	High Temp Output				1 for active	1bit	
	Low Temp Output				1 for active	1bit	
	Low Oil Press Output				1 for active	1bit	
	Original High Temp Output				1 for active	1bit	
	Aux. Output 1 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 (MSB)	1bit	
0038	Reserved					2Bytes	
0039	Reserved					2Bytes	
0040	Reserved					2Bytes	

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
0041	Reserved					2Bytes	
0042	Reserved					2Bytes	
0043	Reserved					2Bytes	
0044	Reserved					2Bytes	
0045	Input 1 Active				1 for active (LSB)	1bit	
	Input 2 Active				1 for active	1bit	
	Input 3 Active				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	
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
	Reserved				1 for active	1bit	
0046 -0140	Reserved					95Bytes	
0141	Engine Speed			r/min	Signed (16bit)	2Bytes	
0142	Battery 1 Voltage		0.1	V	Signed (*10)	2Bytes	
0143	Charger Voltage		0.1	V	Signed (*10)	2Bytes	
0144	Reserved					2Bytes	
0145	Battery 2 Voltage		0.1	V	Signed (*10)	2Bytes	
0146	Reserved					2Bytes	
0147	Reserved					2Bytes	
0148	Temp Sensor Resistance/Current Value					2Bytes	
0149	Temp Sensor Value			°C	Signed (16bit)	2Bytes	
0150	Original Temp Sensor Resistance/Current Value					2Bytes	
0151	Original Temp Sensor Value			°C	Signed (16bit)	2Bytes	
0152	Press Sensor Resistance/Current Value					2Bytes	

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
0153	Press Sensor Value			kPa	Signed (16bit)	2Bytes	
0154-0188	Reserved					35Bytes	
0189	Engine Status				<i>Generator Status Table</i>	2Bytes	
0190	Engine Delay					2Bytes	
0191	Remote Start Status				<i>Remote Start Status Table</i>	2Bytes	
0192	Remote Start Delay					2Bytes	
0193	Reserved					2Bytes	
0194	Reserved					2Bytes	
0195	Reserved					2Bytes	
0196	Reserved					2Bytes	
0197	Reserved					2Bytes	
0198	Reserved					2Bytes	
0199	Total Running Hours					2Bytes	
0200	Total Running Minutes					2Bytes	
0201	Total Running Seconds					2Bytes	
0202	Total Start Times					2Bytes	
0203	Reserved					2Bytes	
0204	Reserved					2Bytes	
0205	Reserved					2Bytes	
0206	Reserved					2Bytes	
0207	Reserved					2Bytes	
0208	Reserved					2Bytes	
0209	Reserved					2Bytes	
0210	Reserved					2Bytes	
0211	Maintenance 1 Due Countdown (Hours)					2Bytes	
0212	Maintenance 1 Due Countdown (Minutes)					2Bytes	
0213	Maintenance 1 Due Countdown (Seconds)					2Bytes	
0214	Reserved					2Bytes	
0215	Reserved					2Bytes	
0216	Reserved					2Bytes	
0217	Controller Model					2Bytes	
0218	Controller Software Version				(*10)	2Bytes	
0219	Controller Hardware Version				(*10)	2Bytes	
0220	Release Time (Year)				Only the last two bits	2Bytes	

Address	Item	Range	Conversion Coefficient	Unit	Description	Byte	Note
					are kept.		
0221	Release Time (Month)					2Bytes	
0222	Release Time (Day)					2Bytes	
0223	Reserved					2Bytes	
0224	Reserved					2Bytes	
0225	Controller Time: Year				Only the last two bits are kept.	2Bytes	
0226	Controller Time: Month					2Bytes	
0227	Controller Time: Day					2Bytes	
0228	Controller Time: Week					2Bytes	
0229	Controller Time: Hour					2Bytes	
0230	Controller Time: Minute					2Bytes	
0231	Controller Time: Second					2Bytes	
0232-0257	Reserved					26Bytes	
0258	Maintenance 2 Due Countdown (Hours)					2Bytes	
0259	Maintenance 2 Due Countdown (Minutes)					2Bytes	
0260	Maintenance 2 Due Countdown (Seconds)					2Bytes	
0261	Maintenance 3 Due Countdown (Hours)					2Bytes	
0262	Maintenance 3 Due Countdown (Minutes)					2Bytes	
0263	Maintenance 3 Due Countdown (Seconds)					2Bytes	
0264-0293	Reserved					30Bytes	

5.2 GENERATOR STATUS

Table 22 - Generator Status

No.	Item	Range	Description
0	Standby		No delay will be displayed in this status
1	Pre-heat		
2	Fuel Output		No delay will be displayed in this status
3	Crank Delay		
4	Crank Rest		
5	Safety On		
6	Start Idle Speed		
7	Warming Up		
8	Waiting for Load		No delay will be displayed in this status
9	Normal Running		No delay will be displayed in this status
10	Cooling		
11	Stop Idle Speed		
12	Energize to Stop		
13	Wait Stop Time		
14	Stop Over		
15	Failed to Stop		No delay will be displayed in this status

5.3 REMOTE START STATUS

Table 23 - Remote Start Status

No.	Contents	Description
0	No Delay	No delay will be displayed in this status
1	Start Delay	
2	Stop Delay	