FPC2000

Diesel Fire Pump Controller

COMMUNICATION PROTOCOL

SmartGenRegistered trademark

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Table 1 Software Version

Date	Version	Content
2024-11-28	V1.0	Original release.

CONTENTS

SmartGen

1 ADDRESS AND DATA OF CONTROLLER INTERNAL REGISTERS

1.1 FUNCTION CODE 03H MAPPING ALARM AND STATUS COIL OF DATA FIELD

Table 2 Alarm and Status Coil of Data Field

Modbus Address	PLC Address	Item	Description
0000.0	40001.0	Common Alarm	"0" means no common alarm occurs "1" means a common alarm occurs (0000.0 means the Boolean value at Bit0 of address 0000) The content listed below follows the same rule
0000.1	40001.1	Common Warning	
0000.2	40001.2	Common Fault Alarm	
0000.3	40001.3	/	
0000.4	40001.4	/	
0000.5	40001.5	Manual Mode	
0000.6	40001.6	Stop Mode	
0000.7	40001.7	Auto Mode	
0000.8	40001.8	Input Lock	
0000.9	40001.9	Start Engine	
0000.10	40001.10	Engine Running Status	
0000.11	40001.11	/	
0000.12	40001.12	AC Voltage Normal	
0000.13	40001.13	AC Voltage Abnormal	
0000.14	40001.14	Transient AC Voltage Normal	
0000.15	40001.15	Transient AC Voltage Abnormal	
0001.0	40002.0	High Engine Temp. Warning	
0001.1	40002.1	Low Engine Temp. Warning	
0001.2	40002.2	Low Oil Pressure Warning	
0001.3	40002.3	Start Failure Warning	
0001.4	40002.4	Running Fault Warning	
0001.5	40002.5	Overspeed Warning	
0001.6	40002.6	Underspeed Warning	
0001.7	40002.7	Stalling Warning	
0001.8	40002.8	ECM in Standby Warning	
0001.9	40002.9	ECM Warning	
0001.10	40002.10	Fuel Injection Fault Warning	
0001.11	40002.11	Low PLD Suction Pressure Warning	
0001.12	40002.12	High Raw Water Temp. Warning	
0001.13	40002.13	Low Raw Water Flow Warning	
0001.14	40002.14	Battery I Fault Warning	
0001.15	40002.15	Battery II Fault Warning	
0002.0	40003.0	/	

Modbus Address	PLC Address	Item	Description
0002.1	40003.1	Engine Status Warning	
0002.2	40003.2	/	
0002.3	40003.3	Engine Fault Warning	
0002.4	40003.4	Fuel Tank Leakage Warning	
0002.5	40003.5	Low Fuel Level Warning	
0002.6	40003.6	High Fuel Level Warning	
0002.7	40003.7	AC Voltage Unavailable Warning	
0002.8	40003.8	High Ambient Temp. Warning	
0002.9	40003.9	Low Ambient Temp. Warning	
0002.10	40003.10	Low Water Reservoir Level Warning	
0002.11	40003.11	Water Reservoir Empty Warning	
0002.12	40003.12	/	
0002.13	40003.13	Pump Room Fault Warning	
0002.14	40003.14	Charger I Fault Warning	
0002.15	40003.15	Charger II Fault Warning	
0003.0	40004.0	Solenoid Valve Fault Warning	
0003.1	40004.1	Test Failure Warning	
0003.2	40004.2	Control Panel Fault Warning	
0003.3	40004.3	Battery I Overvoltage Warning	
0003.4	40004.4	Battery II Overvoltage Warning	
0003.5	40004.5	Battery I Undervoltage Warning	
0003.6	40004.6	Battery II Undervoltage Warning	
0003.7	40004.7	CAN Comm. Failure Warning	
0003.8	40004.8	AC Overvoltage Warning	
0003.9	40004.9	AC Undervoltage Warning	
0003.10	40004.10	AC Overfrequency Warning	
0003.11	40004.11	AC Underfrequency Warning	
0003.12	40004.12	Pressure Sensor Warning	
0003.13	40004.13	Charger I Over Current Warning	
0003.14	40004.14	Charger II Over Current Warning	
0003.15	40004.15	/	
0004.0	40005.0	High Engine Temp. Fault	
0004.1	40005.1	Low Engine Temp. Fault	
0004.2	40005.2	Low Oil Pressure Fault	
0004.3	40005.3	Start Failure Fault	
0004.4	40005.4	Running Fault	
0004.5	40005.5	Overspeed Fault	
0004.6	40005.6	Underspeed Fault	
0004.7	40005.7	Stalling Fault	
0004.8	40005.8	ECM in Standby Fault	
0004.9	40005.9	ECM Fault	
0004.10	40005.10	Fuel Injection Fault	
0004.11	40005.11	Low PLD Suction Pressure Fault	

Modbus Address	PLC Address	Item	Description
0004.12	40005.12	High Raw Water Temp. Fault	
0004.13	40005.13	Low Raw Water Flow Fault	
0004.14	40005.14	Battery I Fault	
0004.15	40005.15	Battery II Fault	
0005.0	40006.0	/	
0005.1	40006.1	/	
0005.2	40006.2	/	
0005.3	40006.3	Engine Fault	
0005.4	40006.4	Fuel Tank Leakage Fault	
0005.5	40006.5	Low Fuel Level Fault	
0005.6	40006.6	High Fuel Level Fault	
0005.7	40006.7	AC Voltage Unavailable Fault	
0005.8	40006.8	High Ambient Temp. Fault	
0005.9	40006.9	Low Ambient Temp. Fault	
0005.10	40006.10	Low Water Reservoir Level Fault	
0005.11	40006.11	Water Reservoir Empty Fault	
0005.12	40006.12	/	
0005.13	40006.13	Pump Room Fault	
0005.14	40006.14	Charger I Fault	
0005.15	40006.15	Charger II Fault	
0006.0	40007.0	Solenoid Valve Fault	
0006.1	40007.1	Test Failure Fault	
0006.2	40007.2	Control Panel Fault	
0006.3	40007.3	Battery I Overvoltage Fault	
0006.4	40007.4	Battery II Overvoltage Fault	
0006.5	40007.5	Battery I Undervoltage Fault	
0006.6	40007.6	Battery II Undervoltage Fault	
0006.7	40007.7	/	
0006.8	40007.8	AC Overvoltage Fault	
0006.9	40007.9	AC Undervoltage Fault	
0006.10	40007.10	AC Overfrequency Fault	
0006.11	40007.11	AC Underfrequency Fault	
0006.12	40007.12	Pressure Sensor Fault	
0006.13	40007.13	Charger I Over Current Fault	
0006.14	40007.14	Charger II Over Current Fault	
0006.15	40007.15	/	
0007.0	40008.0	Aux. Input 1 Status	"0" means there is no signal input "1" means there is signal input
0007.1	40008.1	Aux. Input 2 Status	
0007.2	40008.2	Aux. Input 3 Status	
0007.3	40008.3	Aux. Input 4 Status	
0007.4	40008.4	Aux. Input 5 Status	
0007.5	40008.5	/	

Modbus Address	PLC Address	Item	Description
0007.6	40008.6	/	
0007.7	40008.7	/	
0007.8	40008.8	/	
0007.9	40008.9	/	
0007.10	40008.10	/	
0007.11	40008.11	/	
0007.12	40008.12	/	
0007.13	40008.13	/	
0007.14	40008.14	Extension Aux. Input 1 Status	
0007.15	40008.15	Extension Aux. Input 2 Status	
0008.0	40009.0	Input 301 Status	
0008.1	40009.1	Input 302 Status	
0008.2	40009.2	Input 303 Status	
0008.3	40009.3	Input 304 Status	
0008.4	40009.4	Input 305 Status	
0008.5	40009.5	Input 310 Status	
0008.6	40009.6	Input 311 Status	
0008.7	40009.7	Input 312 Status	
0008.8	40009.8	ENGINE-ON Input Status	
0008.9	40009.9	OVER SPEED Input Status	
0008.10	40009.10	LOP Input Status	
0008.11	40009.11	HET Input Status	
0008.12	40009.12	CF1 Input Status	
0008.13	40009.13	CF2 Input Status	
0008.14	40009.14	/	
0008.15	40009.15	/	
0009.0	40010.0	Aux. Output 1 Status	"1" means there is signal output "0" means there is no signal output
0009.1	40010.1	Aux. Output 2 Status	
0009.2	40010.2	Aux. Output 3 Status	
0009.3	40010.3	Aux. Output 4 Status	
0009.4	40010.4	Aux. Output 5 Status	
0009.5	40010.5	Aux. Output 6 Status	
0009.6	40010.6	/	
0009.7	40010.7	/	
0009.8	40010.8	/	
0009.9	40010.9	/	
0009.10	40010.10	/	
0009.11	40010.11	/	
0009.12	40010.12	/	
0009.13	40010.13	Extension Aux. Output 1 Status	
0009.14	40010.14	Extension Aux. Output 2 Status	
0009.15	40010.15	Extension Aux. Output 3 Status	

Modbus Address	PLC Address	Item	Description
0010.0	40011.0	SV Output Status	
0010.1	40011.1	AB Output Status	
0010.2	40011.2	SOLENOID_ON Output Status	
0010.3	40011.3	SOLENOID_OFF Output Status	
0010.4	40011.4	CONTACTOR1 Output Status	
0010.5	40011.5	CONTACTOR2 Output Status	
0010.6	40011.6	BOOST1 Output Status	
0010.7	40011.7	BOOST2 Output Status	
0010.8	40011.8	Charger I MOSFET On-State	
0010.9	40011.9	Charger II MOSFET On-State	
0010.10	40011.10	/	
0010.11	40011.11	/	
0010.12	40011.12	/	
0010.13	40011.13	/	
0010.14	40011.14	/	
0010.15	40011.15	/	
0011.0	40012.0	Sensor 1 Open Warning	
0011.1	40012.1	/	
0011.2	40012.2	/	
0011.3	40012.3	Sensor 1 Over Limit Warning	
0011.4	40012.4	Sensor 2 Open Warning	
0011.5	40012.5	/	
0011.6	40012.6	/	
0011.7	40012.7	Sensor 2 Over Limit Warning	
0011.8	40012.8	Sensor 3 Open Warning	
0011.9	40012.9	/	
0011.10	40012.10	/	
0011.11	40012.11	Sensor 3 Over Limit Warning	
0011.12	40012.12	Sensor 4 Open Warning	
0011.13	40012.13	/	
0011.14	40012.14	/	
0011.15	40012.15	Sensor 4 Over Limit Warning	
0012.0	40013.0	Sensor 5 Open Warning	
0012.1	40013.1	/	
0012.2	40013.2	/	
0012.3	40013.3	Sensor 5 Over Limit Warning	
0012.4	40013.4	Extension Sensor 1 Open Warning	
0012.5	40013.5	/	
0012.6	40013.6	/	
0012.7	40013.7	Extension Sensor 1 Over Limit Warning	
0012.8	40013.8	Extension Sensor 2 Open Warning	
0012.9	40013.9	/	

Modbus Address	PLC Address	Item	Description
0012.10	40013.10	/	
0012.11	40013.11	Extension Sensor 2 Over Limit Warning	
0012.12	40013.12	/	
0012.13	40013.13	/	
0012.14	40013.14	/	
0012.15	40013.15	Sensor Warning	
0013.0	40014.0	Sensor 1 Open Fault	
0013.1	40014.1	/	
0013.2	40014.2	/	
0013.3	40014.3	/	
0013.4	40014.4	Sensor 2 Open Fault	
0013.5	40014.5	/	
0013.6	40014.6	/	
0013.7	40014.7	/	
0013.8	40014.8	Sensor 3 Open Fault	
0013.9	40014.9	/	
0013.10	40014.10	/	
0013.11	40014.11	/	
0013.12	40014.12	Sensor 4 Open Fault	
0013.13	40014.13	/	
0013.14	40014.14	/	
0013.15	40014.15	/	
0014.0	40015.0	Sensor 5 Open Fault	
0014.1	40015.1	/	
0014.2	40015.2	/	
0014.3	40015.3	/	
0014.4	40015.4	Extension Sensor 1 Open Fault	
0014.5	40015.5	/	
0014.6	40015.6	/	
0014.7	40015.7	/	
0014.8	40015.8	Extension Sensor 2 Open Fault	
0014.9	40015.9	/	
0014.10	40015.10	/	
0014.11	40015.11	/	
0014.12	40015.12	/	
0014.13	40015.13	/	
0014.14	40015.14	/	
0014.15	40015.15	Sensor Fault	
0015.0	40016.0	Deluge Valve Start	
0015.1	40016.1	Remote Manual Start	
0015.2	40016.2	Remote Auto Start	
0015.3	40016.3	Flow/Zone Start	

Modbus Address	PLC Address	Item	Description
0015.4	40016.4	Scheduled Start	
0015.5	40016.5	Button Start	
0015.6	40016.6	Low Pressure Start	
0015.7	40016.7	Test Button Start	
0015.8	40016.8	Emergency Start	
0015.9	40016.9	/	
0015.10	40016.10	/	
0015.11	40016.11	/	
0015.12	40016.12	/	
0015.13	40016.13	/	
0015.14	40016.14	/	
0015.15	40016.15	/	
0016.0	40017.0	/	
0016.1	40017.1	/	
0016.2	40017.2	Stop Failure Fault	
0016.3	40017.3	/	
0016.4	40017.4	Charger I Overvoltage Fault	
0016.5	40017.5	Charger I Undervoltage Fault	
0016.6	40017.6	Charger II Overvoltage Fault	
0016.7	40017.7	Charger II Undervoltage Fault	
0016.8	40017.8	Charger I Boost Fault	
0016.9	40017.9	Charger II Boost Fault	
0016.10	40017.10	Charger I Boost Warning	
0016.11	40017.11	Charger II Boost Warning	
0016.12	40017.12	Charger I Overvoltage Warning	
0016.13	40017.13	Charger I Undervoltage Warning	
0016.14	40017.14	Charger II Overvoltage Warning	
0016.15	40017.15	Charger II Undervoltage Warning	

EXAMPLE:

If "Aux. Input 1 Status" and "Aux. Output 5 Status" need to be read, check the table above and find their Modbus addresses are 007.0 and 007.4, so it needs to read one data address.

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 (007)		Request Data Length (1)		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	03	00	07	00	01	35	CB

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 007 MSB	Data of Address 007 LSB	LSB	MSB
01	03	02	00	10	B9	88

Table 5 Data Analysis

Address	Data Received (Hexadecimal)	Convert to Binary	Meaning
007	0010H	0000 0000 0001 0000 (Mapping to 507.15, 507.14, ..., 507.1, 507.0 respectively)	Data of Bit 4 is 1, which means the Aux. Input 5 is active. Data of Bit 0 is 0, which means the Aux. Input 1 is inactive.

1.2 FUNCTION CODE 03H MAPPING PARAMETERS OF DATA FIELD

Table 6 Parameters of Data Field

Modbus Address	PLC Address	Item	Range (Decimal)	Ratio	Unit	Description	Remarks
1000	41001	Year	0~65000	1		16-bit Unsigned	Only available for FPC2000D
1001	41002	Month	0~65000	1		16-bit Unsigned	
1002	41003	Day	0~65000	1		16-bit Unsigned	
1003	41004	Day of Week	0~65000	1		16-bit Unsigned	
1004	41005	Hour	0~65000	1		16-bit Unsigned	
1005	41006	Minute	0~65000	1		16-bit Unsigned	
1006	41007	Second	0~65000	1		16-bit Unsigned	
1007	41008	Ua	0~65000	1	V	16-bit Unsigned	
1008	41009	Frequency	0~100.00	0.01	Hz	16-bit Unsigned	
1009	41010	Pipe Pressure	(-32768~ +32767	1	kPa	16-bit Signed	The data transmitted is kPa value when the unit of pipeline pressure is kPa/bar/psi.
				0.1	MPa		
1010	41011	Sensor 1 Resistance/Current /Voltage Value	0~65000	0.1	Ω	16-bit Unsigned	
				0.01	V		
				0.01	mA		
1011	41012	Sensor 1 Value	(-32768~ +32767	1		16-bit Signed	
1012	41013	Sensor 2 Resistance/Current /Voltage Value	0~65000	0.1	Ω	16-bit Unsigned	
				0.01	V		
				0.01	mA		
1013	41014	Sensor 2 Value	(-32768~ +32767	1		16-bit Signed	
1014	41015	Sensor 3 Resistance/Current /Voltage Value	0~65000	0.1	Ω	16-bit Unsigned	
				0.01	V		
				0.01	mA		
1015	41016	Sensor 3 Value	(-32768~ +32767	1		16-bit Signed	
1016	41017	Sensor 4 Resistance/Current /Voltage Value	0~65000	0.1	Ω	16-bit Unsigned	
				0.01	V		
				0.01	mA		
1017	41018	Sensor 4 Value	(-32768~ +32767	1		16-bit Signed	
1018	41019	Sensor 5 Resistance/Current /Voltage Value	0~65000	0.1	Ω	16-bit Unsigned	
				0.01	V		
				0.01	mA		

Modbus Address	PLC Address	Item	Range (Decimal)	Ratio	Unit	Description	Remarks
1019	41020	Sensor 5 Value	(-32768~ +32767	1		16-bit Signed	
1020	41021	Extension Sensor 1 Resistance/Current /Voltage Value	0~65000	0.1	Ω	16-bit Unsigned	
				0.01	V		
				0.01	mA		
1021	41022	Extension Sensor 1 Value	(-32768~ +32767	1		16-bit Signed	
1022	41023	Extension Sensor 2 Resistance/Current /Voltage Value	0~65000	0.1	Ω	16-bit Unsigned	
				0.01	V		
				0.01	mA		
1023	41024	Extension Sensor 2 Value	(-32768~ +32767	1		16-bit Signed	
1024	41025	Voltage Status					See details in AC Power Supply Status
1025	41026	Voltage Status Delay	0~65000	1		16-bit Unsigned	
1026	41027	Start Control Status	0~5	1		16-bit Unsigned	1: Start Delay 2: Start Time 3: Start Interval 4: Stop Delay 5: Start Success
1027	41028	Start Control Delay	0~65000	1		16-bit Unsigned	
1028	41029	Auto Stop Delay	0~65000	1		16-bit Unsigned	
1029	41030	Button Test Running Time	0~65000	1		16-bit Unsigned	
1030	41031	Scheduled Start Running Time	0~65000	1		16-bit Unsigned	
1031	41032	Current Accumulated Running Hours	0~65534	1		16-bit Unsigned	
1032	41033	Current Accumulated Running Minutes	0~59	1		16-bit Unsigned	
1033	41034	Current Accumulated Running Seconds	0~59	1		16-bit Unsigned	
1034	41035	Last Accumulated Running Hours	0~65534	1		16-bit Unsigned	
1035	41036	Last Accumulated Running Minutes	0~59	1		16-bit Unsigned	
1036	41037	Last Accumulated Running Seconds	0~59	1		16-bit Unsigned	

Modbus Address	PLC Address	Item	Range (Decimal)	Ratio	Unit	Description	Remarks
1037	41038	Total Accumulated Running Hours (LSB)	0~999999	1		16-bit Unsigned	
1038	41039	Total Accumulated Running Hours (MSB)				16-bit Unsigned	
1039	41040	Total Accumulated Running Minutes	0~59	1		16-bit Unsigned	
1040	41041	Total Accumulated Running Seconds	0~59	1		16-bit Unsigned	
1041	41042	Accumulated Start Times (LSB)	0~999999	1		16-bit Unsigned	
1042	41043	Accumulated Start Times (MSB)				16-bit Unsigned	
1043	41044	Start Method	0~9			16-bit Unsigned	1: Deluge Valve Start 2: Remote Manual Start 3: Remote Auto Start 4: Flow/Zone Start 5: Scheduled Start 6: Button Start 7: Low Pressure Start 8: Test Button Start 9: Emergency Start
1044	41045	Ambient Temp. Value	(-55~125)	0.1	°C	16-bit Signed	
1045	41046	Engine Speed	0~6000	1	rpm	16-bit Unsigned	
1046	41047	Battery 1 Voltage	0~60.0	0.1	V	16-bit Unsigned	
1047	41048	Battery 2 Voltage	0~60.0	0.1	V	16-bit Unsigned	
1048	41049	Charger I Current	0~20.0	0.1	A	16-bit Unsigned	
1049	41050	Charger II Current	0~20.0	0.1	A	16-bit Unsigned	
1050	41051	Charger I Voltage	0~60.0	0.1	V	16-bit Unsigned	
1051	41052	Charger II Voltage	0~60.0	0.1	V	16-bit Unsigned	
1052	41053	Charger I Status	0~2			16-bit Unsigned	0: Standby 1: Trickle Charging 2: Quick

Modbus Address	PLC Address	Item	Range (Decimal)	Ratio	Unit	Description	Remarks
							Charging 3: Balancing Charging 4: Float Charging
1053	41054	Charger I Delay	0~65000	1	s	16-bit Unsigned	
1054	41055	Charger II Status	0~2			16-bit Unsigned	0: Standby 1: Trickle Charging 2: Quick Charging 3: Balancing Charging 4: Float Charging
1055	41056	Charger II Delay	0~65000	1	s	16-bit Unsigned	
1056	41057	Unit of Pipeline Pressure	0~3			16-bit Unsigned	0: kPa 1: bar 2: psi 3: MPa
1057	41058	Current Start Times	1~10	1		16-bit Unsigned	

NOTE 1: Actual value = data received * ratio. Take the Frequency as the example: if the data received is 5000 (1388H), ratio is 0.01Hz, then the actual frequency value is 50.00Hz (5000*0.01Hz).

NOTE 2: If the data has 4 bytes, the actual value = high order bits of data received * 65536 + low order bits of data received.

EXAMPLE:

If "Ua" and "Frequency" need to be read, check the table above and find its Modbus address is 1007 and 1008, so it needs to read two bytes of data.

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

Table 7 Master Request Command

Slave Address	Function Code	Start Address (1007)		Request Data Length (2)		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	03	03	EF	00	02	F5	BA

The slave response command is as following:

Table 8 Slave Response Command

Slave Address	Function Code	Data Length (Bytes)	Data				CRC 16	
			Data of Address 1007 MSB	Data of Address 1007 LSB	Data of Address 1008 MSB	Data of Address 1008 LSB	LSB	MSB
01	03	04	00	DC	13	88	36	9F

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

Table 9 Data Analysis

Address	Data Received (Hex)	Meaning
1007	00DCH	Ua is 220V
1008	1388H	Frequency is 50.00Hz

1.3 FUNCTION CODE 05H MAPPING REMOTE COIL FIELD

Table 10 Remote Coil Field

Modbus Address	PLC Address	Item	Description
15000	15001	Manual I Start	Active only when sending FF00H
15001	15002	Manual Stop-Short Press	Active only when sending FF00H
15002	15003	Manual II Start	Active only when sending FF00H
15003	15004	Scheduled Start	Active only when sending FF00H
15004	15005	Test Button Start	Active only when sending FF00H
15005	15006	Alarm Test	Active only when sending FF00H
15006	15007	Alarm Reset	Active only when sending FF00H
15007	15008	Alarm Mute	Active only when sending FF00H
15008	15009	Manual Stop-Long Press	Active only when sending FF00H
15009	15010	Restore Factory Setting	Active only when sending FF00H
15010	15011	Restore Standard Setting	Active only when sending FF00H
15011	15012	Restore Accumulated Data	Active only when sending FF00H
15012	15013	First Config I Start	Active only when sending FF00H
15013	15014	First Config Stop	Active only when sending FF00H
15014	15015	First Config II Start	Active only when sending FF00H

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

If taking Manual Start as example, check the table first and find its remote address is 15000.

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

Table 11 Master Request Command

Slave Address	Function Code	Remote Address (15000)		Remote Data		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	**05**	**3A**	**98**	**FF**	**00**	**01**	**0D**

The slave response command is as following:

Table 12 Slave Response Command

Slave Address	Function Code	Remote Address (15000)		Remote Data		CRC 16	
		MSB	LSB	MSB	LSB	LSB	MSB
01	**05**	**3A**	**98**	**FF**	**00**	**01**	**0D**

1.4 AC POWER SUPPLY STATUS

Table 13 AC Power Supply Status

Value (No.)	Status	Delay
0	Available	There is delay in the status, Unit: Second
1	Unavailable	There is delay in the status, Unit: Second
2	Voltage Normal	No Delay
3	Voltage Unavailable	No Delay
4	Overvoltage	No Delay
5	Undervoltage	No Delay
6	Overfrequency	No Delay
7	Underfrequency	No Delay

SmartGen

2 FAQ

2.1 GROUNDING OF THE CABLE SHIELD

To prevent the coupling of interference on the cable, one end of the cable shield should be grounded.

2.2 TERMINATION RESISTOR

At both ends of the linear network (between the two communication ports furthest apart), two 120-ohm termination resistors need to be installed in parallel. According to the signal transmission theory, the termination resistor can avoid the signal reflections and improve the signal integrity effectively. The value of two termination resistor in parallel is basically equal to the characteristic impedance of the transmission cable.

A standard RS-485 network will usually use the termination resistor. The resistor can be avoided while the cable is too short, or it is a temporary or lab test.

2.3 RS485 TO USB CONVERTER

It can communicate with PC via the SmartGen SG72A converter.

2.4 SOLUTIONS FOR COMMUNICATION FAILURE

1) Check the positive and negative of RS485, or network cable is connected correctly. Check the RS485 converter (if any) is normal.
2) Check the termination resistors are connected correctly or not.
3) Check the communication parameters setting is correct or not. Baud rate, data bit, parity bit and stop bit meet the requirement of controller.
4) Check the Terminal COM is connected correctly with the USB port of PC via RS485 converter.
5) Check the communication address of controller is correct, and the default address is 01.
6) When using function code 03, the maximum data length to be read is 120 addresses, and the ending address can't exceed the greatest Modbus communication address. Please note that for the function code 06 mapping parameters data field, only one address can be written at a time.
7) If there is offset address in the Modbus communication address, the actual Modbus communication address equals to the base address plus offset address.
8) Function code 05 adopts Modbus address to communicate: Although 1 means active, and 0 means inactive, it needs to send FF00H to load corresponding bit as 1, and send 0000H to load corresponding bit as 0; Adopts PLC address to communicate: send 1 as position 1, send 0 as position 0.
9) As for CRC-16, the low-order byte is checked first, the high-order byte is checked later.
10) The frequency of multiple read operations for controller data should not be too high, and the recommended interval between two read operations is no less than 500ms.
11) Disconnect the RS485 cables to the controller, test the voltage difference of RS485 Terminal A and B on the controller, if the result is between -200mV and +200mV, it means the communication port is abnormal.
12) If the cable length is too long, it will result in signal attenuation. So it is recommended to use high-quality cable or add repeaters in the cable.

13) It is recommended to download third-party communication test software to verify whether the serial communication is normal, such as modscan32, modbus poll, etc.

14) It is recommended to download third-party communication test software to verify whether the CAN communication is normal, such as GCANTools.

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