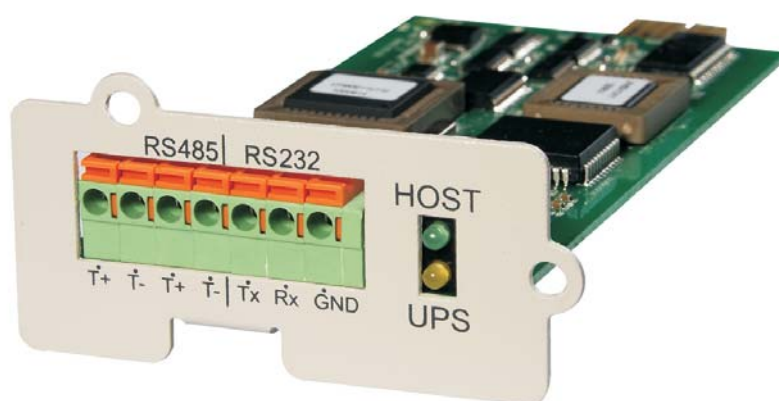


MODBUS Adapter UF-MODBUS110

User Manual – For Hipluse U Series UPS And iTrust UL33 Series UPS



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Chapter 1 Product Description

1.1 Introduction

The UPS JBUS/MODBUS adapter (hereinafter referred to as “adapter”) allows you to use your host monitoring software to monitor your Emerson UPS and FLP field lighting power supply system (FLP for short) equipment through JBUS/MODBUS (RTU) protocol, to learn about the equipment operating status by acquiring the equipment electrical parameter data, operating data and alarm data.

Currently the adapter supports the UPS and FLP equipment listed in Table 1-1.

Table 1-1 UPS and FLP equipment supported by adapter

S/N.	Equipment	Equipment series
1	UL33 UPS	ITrust series
2	Hipulse U UPS 120/160/200/300/400 kVA	Hipulse U series

1.2 Specifications And Features

- Protocol: JBUS/MODBUS (RTU);
- Communication mode: RS485, RS232;
- Setting range of physical address: 1~31;
- Setting range of communication baud rate: 2400, 4800, 9600 (default), 19200bps;
- Communication data format: 1 start bit, 8 data bit, 1 stop bit, no parity check;
- CRC16 standard check mode, first high byte, then low byte;
- Hot-pluggable, easy to install.

1.3 Appearance And Hardware Description

Appearance

The adapter is a plug-in card, and should be plugged in the SNMP slot of the UPS and FLP. The adapter is shown in Figure 1-1.

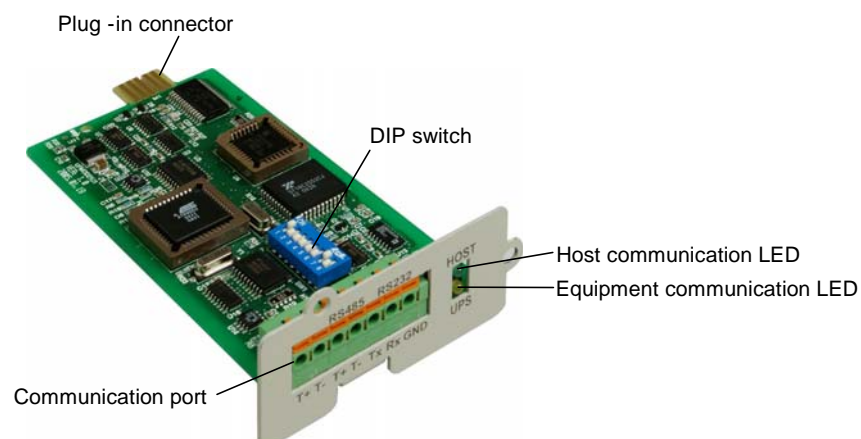


Figure 1-1 Adapter appearance

Hardware description

The printed board of the adapter is available in two sizes: 130mm (L) ×60mm (W) ×1.6mm (H) and 130mm (L) ×63mm (W) ×1.6mm (H); additionally, the former has a narrow opening at the plug-in connector. The former is

applicable to NX, NXr series UPS, iTrust Adapt UPS and APM 150 UPS, while the latter is applicable to Hipulse U series UPS, FLP, and all iTrust series UPS except for iTrust Adapt UPS.

As shown in Figure 1-1, the adapter provides communication port, equipment communication LED, host communication LED, plug-in connector and DIP switch, which are described in Table 1-2.

Table 1-2 Hardware description

Name	Description
Communication port	Connects to the host computer, supports RS232 and RS485 communication modes
equipment communication LED (yellow)	OFF: power off
	ON: power on, but communication with UPS or FLP not established
	Flash slowly (once per 5s): communication with UPS or FLP failed
	Flash quickly (about once per 1s): communication with UPS or FLP is normal
Host communication LED (green)	OFF: communication with host computer not established
	Flash: communication with host computer being normal
Plug-in connector	Plug in the SNMP slot of the UPS or FLP, connect to the UPS or FLP
DIP switch	Used to configure the basic parameters of the adapter



Warning

All external ports of the adapter must connect to SELV circuit. Failure to observe this could cause damage to the adapter.

Chapter 2 Installation

2.1 Unpacking Inspection

Unpack the adapter, take out the delivery list (see Table 2-1), and check the goods against it. Should there be any discrepancy, contact the distributor immediately.

Table 2-1 Adapter delivery list

S/N.	Goods	Qty.	Remark
1	Adapter	1 pcs	
2	CD	1 pcs	UPS JBUS/MODBUS Adapter User Manual

2.2 Installation Notes

1. The adapter should be installed in the SNMP slot of the UPS or FLP, which is also used for the installation of SNMP card. Therefore, if you use the adapter, you cannot use the SNMP card.
2. The adapter is available in two sizes, please verify that your adapter matches the UPS or FLP (refer to the hardware description in section 1.3). Otherwise, the adapter cannot be plugged in the SNMP slot of the UPS or FLP.
3. Some electronic components of the adapter are sensitive to static electricity. To prevent static electricity from damaging the adapter, do not touch its electronic components or circuits, also avoid their contact with live objects. Therefore, please hold the side edges of the adapter when moving or installing it.

2.3 Installation Procedures

Please install the adapter in the following sequence:

1. Set the basic parameters of the adapter;
2. Plug the adapter in the SNMP slot;
3. Connect the communication cable;
4. Set the communication parameters in the host software.

2.3.1 Setting Basic Parameters

To enable the functions of the adapter, you must set its basic parameters, which are:

- Physical address
- Communication baud rate

These parameters are set by the 8-bit DIP switch of the adapter (refer to Figure 1-1 for its location). The up position means ON, the down position means OFF, as shown in the following figure.

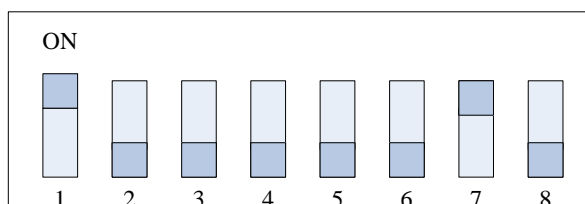


Figure 2-1 DIP switch

The basic parameters of the adapter are set by Bits 1~7 of the DIP switch, Bit 8 is factory reserved. The setting shown in Figure 2-1 is the factory default.

Setting physical address

The physical address of the adapter is set by Bits 1~5. The setting range is 1~31, 0 is factory-reserved setting, 1 is the factory default.

The physical address setting method is shown in Table 2-2:

Table 2-2 Physical address setting method

Physical address	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON



Warning

The physical address 0 is factory reserved. You shall not set the physical address to 0; otherwise, the adapter cannot operate normally.

Setting communication baud rate

The communication baud rate of the adapter is set by Bits 6~7, and can be set to 2400bps, 4800bps, 9600bps, or 19200bps. 9600bps is the factory default.

The communication baud rate setting method is shown in Table 2-3:

Table 2-3 Communication baud rate setting method

Communication baud rate (bps)	Bit 6	Bit 7
2400	OFF	OFF
4800	ON	OFF
9600	OFF	ON
19200	ON	ON

2.3.2 Plugging In Adapter

Note

The adapter is hot-pluggable. You can install the adapter with shutting down the UPS or FLP.

User the following steps to plug the adapter in the SNMP slot of the UPS or FLP:

1. Remove the SNMP slot cover on the rear panel of the UPS or FLP.

Retain the SNMP slot cover and the screws for use in the future. Refer to the corresponding UPS or FLP user manual for the location of the SNMP slot.

2. Align the plug-in connector of the adapter with the SNMP slot, plug the adapter into the slot along the grooves on both sides of the slot, then fix the adapter through the fixing holes on the adapter panel.

More than ten seconds later, you will see the yellow equipment communication LED on the adapter panel flash quickly, indicating that the adapter has started to operate normally and the communication between the adapter and the UPS or FLP has been established.

2.3.3 Connecting Communication Cable

Note

RS485 communication cables use twisted-pair.

After plugging in and fixing the adapter, you need to connect the communication cable between the communication port of the adapter and the RS232 serial port of the computer.

Communication port of the adapter

The communication port of the adapter is shown in Figure 2-2.

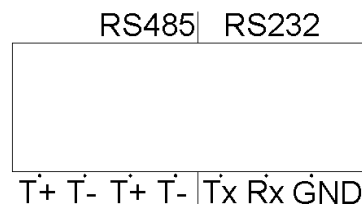


Figure 2-2 Communication port

As shown in the figure, the four terminals on the left are for RS485 communication, while the three ones on the right are for RS232 communication. The terminals are described in Table 2-4.

Table 2-4 Communication port terminal description

Terminal	Description
T+	RS485 communication differential signal+, 2 terminals, shorted internally, used for cascade connection
T-	RS485 communication differential signal -, 2 terminals, shorted internally, used for cascade connection
Tx	Transmit terminal of RS232 communication signal
Rx	Receive terminal of RS232 communication signal
GND	Signal ground

Connecting communication cable

There are two methods to make the communication connection between the adapter and the host computer.

1. RS232 communication

Make the connection between the adapter and the computer using the method shown in Table 2-5.

Table 2-5 Connection bet. adapter and computer (RS232)

Communication port of adapter	RS232 port of computer (DB9 male)
Tx	Pin 2
Rx	Pin 3
GND	Pin 5

2. RS485 communication

Where RS485 communication is used, please provide an RS232-to-RS485 converter for yourself, and make the connection between the adapter and the computer using the method shown in Table 2-6 and Table 2-7. For details of the communication ports of the RS232-to-RS485 converter, please refer to the user manual of the converter.

Table 2-6 Connection bet. adapter and RS232/RS485 converter (RS485)

Communication port of adapter	RS485 port of RS232-to-RS485 converter
T+	RS485 communication differential signal +
T-	RS485 communication differential signal -

Table 2-7 Connection bet. RS232/RS485 converter and computer (RS485)

RS232 port of RS232-to-RS485 converter	RS232 port of computer (DB9 male)
RS232 data transmission terminal	Pin 2
RS232 data receiving terminal	Pin 3
Signal ground	Pin 5



Warning

RS232 communication and RS485 communication cannot be used at the same time.

2.3.4 Setting Communication Parameters In Host Software

After making communication connection, please start the host monitoring software and set the communication parameters. Note that the communication parameter settings in the host monitoring software should agree with the adapter's physical address and communication baud rate settings by the DIP switch. For the setting method, refer to the user manual of the host monitoring software.

After setting the communication parameters in the software, you will see the green host communication LED of the adapter flash, which indicates that the adapter is in normal operation and the communication between the software and the adapter has been established. At this point, you can view the UPS or FLP data through the software.

The installation of the adapter is complete.

Chapter 3 Protocol Text

The preconditions for the user's host monitoring software to monitor the UPS or FLP through the adapter is that the software supports JBUS/MODBUS (RTU) protocol and is able to interpret the JBUS/MODBUS (RTU) protocol text of the corresponding UPS or FLP.



Note

1. The adapter provides answer only to the #03 query command. It will not answer the query commands of other function codes.
2. When the adapter answers the #03 query command, it will return invalid data address information, with abnormal code #02, if the required byte of answer information is bigger than 100.
3. In communication through JBUS/MODBUS(RTU) protocol, the adapter is passive, waiting for the host monitoring software to query it.

The following sections provide the JBUS/MODBUS (RTU) protocol texts of various UPSs or FLPs.

3.1 Protocol Text Of UL33 UPS

1. UPS basic information

ID	Byte	Item	Value
1000~1004	10	UPS name	"UL33 0200L"
1005	2	UPS firmware release	0x010B corresponds to V1.11
1006~1015	20	Manufacturer	"EmersonNetworkPower "
1019	2	Adapter firmware release	0x010B corresponds to V1.11

2. UPS alarm data

ID	Bit	Item	Value
1030	Bit 0	UPS alarm flag	0: Normal; 1: Alarm
	Bit 1	Adapter communication failure flag	0: Normal; 1: Fault
	Bit 2	Not defined	
	Bit 3	Synchronization/Unsynchronization	0: Normal 1: Unsynchronization
	Bits 5/4	Mains voltage	00: Normal 01: Abnormal 10: Undervoltage
	Bit 6	Rectifier	0: Normal; 1: Fault
	Bit 7	Inverter	0: Normal; 1: Fault
	Bits 9/8	Bypass (voltage or frequency)	00: Normal 01: Outside synchronization range 10: Outside protection range
	Bits 12~10	Battery voltage status	000: Normal 001: No battery 010: Below lower limit (EOD point) 011: Above upper limit (voltage too high) 100: Battery reverse connection 101: Pre-alarm
	Bits 15~13	Not defined	
1031	Bit 0	Battery test result	0: Normal; 1: need replacement
	Bit 1	Mains frequency	0: Normal; 1: Abnormal
	Bit 2	Input transformer over-temperature	0: Normal; 1: Over-temperature
	Bit 3	Output transformer over-temperature	0: Normal; 1: Over-temperature
	Bit 4	Inverter SCR damaged	0: Normal; 1: Abnormal
	Bit 5	Bypass SCR damaged	0: Normal; 1: Abnormal
	Bit 6	User operation error	0: Normal; 1: Abnormal

ID	Bit	Item	Value
1031	Bit 7	Inverter heatsink over-temperature	0: Normal; 1: Over-temperature
	Bit 8	Rectifier heatsink over-temperature	0: Normal; 1: Over-temperature
	Bit 9	Inverter fan failure	0: Normal; 1: Failed
	Bit 10	Rectifier fan fault	0: Normal; 1: Failed
	Bit 11	Battery contactor fault	0: Normal; 1: Abnormal
	Bit 12	Rectifier input contactor abnormal	0: Normal; 1: Abnormal
	Bit 13	Auxiliary contactor abnormal	0: Normal; 1: Abnormal
	Bit 14	Input fuse blowout	0: Normal; 1: Abnormal
	Bit 15	Output fuse blowout	0: Normal; 1: Abnormal
1032	Bit 0	Module output overload	0: Normal; 1: Overload
	Bit 1	Parallel system overload	0: Normal; 1: Overload
	Bit 2	Module overload timeout	0: Normal; 1: Overload timeout
	Bit 3	Bypass over-current timeout	0: Normal; 1: Over-current timeout
	Bit 4	Auxiliary supply 1 failure	0: Normal; 1: Fault
	Bit 5	Auxiliary supply 2 failure	0: Normal; 1: Fault
	Bit 6	UPS shutdown due to abnormal bypass	0: Normal; 1: Fault
	Bit 7	Bypass input phase rotation	0: Normal; 1: Fault
	Bit 8	Mains input phase rotation	0: Normal; 1: Fault
	Bit 9	Input soft start fault	0: Normal; 1: Fault
	Bit 10	AC output overvoltage	0: Normal; 1: Fault
	Bit 11	Output over-current impact	0: Normal; 1: Fault
	Bit 12	Inverter module over-current	0: Normal; 1: Fault
	Bit 13	Rectifier module over-current	0: Normal; 1: Fault
	Bits 15/14	Not defined	
1033	Bit 0	Transfer to bypass due to load impact	0: Normal; 1: Fault
	Bit 1	Transfer limitation	0: Normal; 1: Fault
	Bit 2	Parallel load sharing fault	0: Normal; 1: Fault
	Bit 3	Turn-off due to low bus voltage	0: Normal; 1: Fault
	Bit 4	Other module requests transfer to bypass	0: Normal; 1: Fault
	Bit 5	Ambient temperature too high	0: Normal; 1: Fault
	Bit 6	Ambient alarm channel 1 fault	0: Normal; 1: Fault
	Bit 7	Ambient alarm channel 2 fault	0: Normal; 1: Fault
	Bit 8	Ambient alarm channel 3 fault	0: Normal; 1: Fault
	Bit 9	Ambient alarm channel 4 fault	0: Normal; 1: Fault
	Bit 10	Ambient alarm channel 5 fault	0: Normal; 1: Fault
	Bit 11	Ambient alarm channel 6 fault	0: Normal; 1: Fault
	Bit 12	Ambient alarm channel 7 fault	0: Normal; 1: Fault
	Bit 13	Ambient alarm channel 8 fault	0: Normal; 1: Fault
	Bit 14	Rectifier communication fault	0: Normal; 1: Fault
	Bit 15	Inverter communication fault	0: Normal; 1: Fault
1034	Bit 0	Parallel board fault	0: Normal; 1: Fault
	Bit 1	DC bus overvoltage fault	0: Normal; 1: Fault
	Bit 2	Batt. Convertor Fault	0: Normal; 1: Fault
	Bit 3	Battery Fuse Fault	0: Normal; 1: Fault
	Bit 4	Batt. Conv. Comm. Fail	0: Normal; 1: Fault
	Bit 5	Battery Voltage Abnormal	0: Normal; 1: Fault
	Bit 6	Rectifier inductor over-temperature	0: Normal; 1: Fault
	Bit 7	Equalize charge overtime	0: Normal; 1: Fault
	Bits 15~8	Not defined	

3. UPS status data

ID	Bit	Item	Value
1040	Bits 2/1/0	Operation mode	000: Neither Normal nor Battery mode 001: Normal mode 010: Battery mode 011: Bypass mode 100: Source share mode
	Bit 3	Battery under test	0: Not under test; 1: Under test
	Bits 5/4	Boost/float charge	00: Float charge; 01: Boost charge; 10: Not charging
	Bit 6	Turn-on/off	0: Turn-on; 1: Turn-off
	Bit 7	Generator connection	0: Connected; 1: Not connected
	Bit 8	Input breaker state	0: Open; 1: Closed
	Bit 9	Manual bypass breaker state	0: Open; 1: Closed
	Bit 10	Automatic bypass breaker state	0: Open; 1: Closed
	Bit 11	Output breaker state	0: Open; 1: Closed
	Bit 12	Generator operation status	0: Not in operation; 1: In operation
	Bit 13	Module output inhibited	0: Yes; 1: No
	Bit 14	Parallel system output inhibited	0: Yes; 1: No
	Bit 15	Not defined	
1041	Bits 2/1/0	UPS property	000: Single module 001: Master in hot standby 010: slave in hot standby 011: Master in parallel 100: Slave in parallel
	Bits 15~3	Not defined	

4. UPS analog data

ID	Byte	Item	Value
1050	2	AC input phase voltage A	2200 corresponds to 220.0Vac
1051	2	AC input phase voltage B	2200 corresponds to 220.0Vac
1052	2	AC input phase voltage C	2200 corresponds to 220.0Vac
1053	2	AC output phase voltage A	2200 corresponds to 220.0Vac
1054	2	AC output phase voltage B	2200 corresponds to 220.0Vac
1055	2	AC output phase voltage C	2200 corresponds to 220.0Vac
1056	2	AC output current A	1000 corresponds to 100.0A
1057	2	AC output current B	1000 corresponds to 100.0A
1058	2	AC output current C	1000 corresponds to 100.0A
1059	2	DC input voltage (battery voltage)	1000 corresponds to 100Vdc
1060	2	Output frequency (3 phases the same)	5000 corresponds to 50.00Hz
1061	2	AC input line voltage AB	3800 corresponds to 380.0Vac
1062	2	AC input line voltage BC	3800 corresponds to 380.0Vac
1063	2	AC input line voltage CA	3800 corresponds to 380.0Vac
1064	2	Phase A input current	1000 corresponds to 100.0A
1065	2	Phase B input current	1000 corresponds to 100.0A
1066	2	Phase C input current	1000 corresponds to 100.0A
1067	2	Input frequency (3 phases the same)	5000 corresponds to 50.00Hz
1068	2	Input power factor (3 phases the same)	100 corresponds to 1
1069	2	Phase A bypass voltage	2200 corresponds to 220.0Vac
1070	2	Phase B bypass voltage	2200 corresponds to 220.0Vac
1071	2	Phase C bypass voltage	2200 corresponds to 220.0Vac
1072	2	Phase A bypass current	1000 corresponds to 100.0A
1073	2	Phase B bypass current	1000 corresponds to 100.0A
1074	2	Phase C bypass current	1000 corresponds to 100.0A
1075	2	Bypass frequency (3 phases the same)	5000 corresponds to 50.00Hz
1076	2	Battery temperature	1000 corresponds to 100 Celsius degrees
1077	2	Phase A output power factor	100 corresponds to 1
1078	2	Phase B output power factor	100 corresponds to 1

ID	Byte	Item	Value
1079	2	Phase C output power factor	100 corresponds to 1
1080	2	Phase A output active power	10000 corresponds to 100.00kW
1081	2	Phase B output active power	10000 corresponds to 100.00kW
1082	2	Phase C output active power	10000 corresponds to 100.00kW
1083	2	Battery current	1000 corresponds to 100.0A
1084	2	Battery autonomy	1 corresponds to 1 minute
1085	2	Phase A output apparent power	10000 corresponds to 100.00kVA
1086	2	Phase B output apparent power	10000 corresponds to 100.00kVA
1087	2	Phase C output apparent power	10000 corresponds to 100.00kVA
1088	2	Phase A output load percentage	1000 corresponds to 100.0%
1089	2	Phase B output load percentage	1000 corresponds to 100.0%
1090	2	Phase C output load percentage	1000 corresponds to 100.0%
1091	2	Ambient temperature	1000 corresponds to 100 Celsius degrees
1092	2	Phase A output peak value	100 corresponds to 1
1093	2	Phase B output peak value	100 corresponds to 1
1094	2	Phase C output peak value	100 corresponds to 1
1095	2	Reserved	
1096	2	Reserved	
1097	2	Reserved	

3.2 Protocol Text Of Hipulse U UPS And FLP

1. UPS basic information

ID	Byte	Item	Value
1000~1004	10	UPS name	"HL33 0200L"
1005	2	UPS firmware release	"0100" corresponds to V1.0
1006~1015	20	Manufacturer	"EmersonNetworkPower "
1019	2	Adapter firmware release	"0x1234" corresponds to Ver12.34

2. UPS alarm data

ID	Bit	Item	Value
1030	Bit 0	UPS alarm flag	0: Normal; 1: Alarm
	Bit 1	Adapter communication fault flag	0: Normal; 1: Fault
	Bit 2	Not defined	
	Bit 3	Synchronization/Unsynchronization	0: Normal 1: Unsynchronization
	Bit 4	Rectifier input voltage	0: Normal; 1: Abnormal
	Bit 5	Rectifier	0: Normal; 1: Fault
	Bit 6	Inverter	0: Normal; 1: Fault
	Bit 7	Bypass (voltage or frequency)	0: Normal 1: Outside specifications
	Bits 10/9/8	Battery total voltage	000: Normal 001: Below lower limit (EOD point) 010: Above upper limit (voltage too high) 011: No battery 100: Pre-alarm 101: Battery reverse connection
	Bit 11	Rectifier input frequency	0: Normal; 1: Outside specifications
	Bit 12	Input fuse	0: Normal; 1 Fail:
	Bit 13	Mains phase	0: Normal; 1: Reversed
	Bit 14	REC input Phase	0: Normal; 1: Missing
	Bit 15	Control power 1	0: Normal; 1: Fault

ID	Bit	Item	Value
1031	Bit 0	Control power 2	0: Normal; 1: Fault
	Bit 1	Rectifier	0: Normal; 1: Current limit
	Bit 2	Soft start	0: Normal; 1: Fail
	Bit 3	Rectifier overtemp.	0: Normal; 1: Overtemp.
	Bit 4	Input filter fault	0: Normal; 1: Fault
	Bit 5	Input filter transfer time-out	0: Normal; 1: Time-out
	Bit 6	Filter contactor fault	0: Normal; 1: Fault
	Bit 7	REC drive circuit fault	0: Normal; 1: Fault
	Bit 8	Rectifier comm. fail	0: Normal; 1: Fail
	Bit 9	Inverter overtemp.	0: Normal; 1: Overtemp.
	Bit 10	Fan fault	0: Normal; 1: Fault
	Bit 11	Inverter STS fail	0: Normal; 1: Fail
	Bit 12	Bypass STS fail	0: Normal; 1: Fail
	Bit 13	Operation invalid	0: Normal; 1: Invalid
	Bit 14	Unit over load	0: Normal; 1: Over load
	Bit 15	System over load	0: Normal; 1: Over load
1032	Bit 0	Unit over load time-out	0: Normal; 1: Time-out
	Bit 1	Byp. abnormal shutdown	0: Normal; 1: Shutdown
	Bit 2	Output over voltage	0: Normal; 1: Over voltage
	Bit 3	Inverter over current	0: Normal; 1: Over current
	Bit 4	Bypass phase	0: Normal; 1: Reverse
	Bit 5	Load impact transfer	0: Normal; 1: Transfer
	Bit 6	Transfer time-out	0: Normal; 1: Time-out
	Bit 7	Load sharing fault	0: Normal; 1: Fault
	Bit 8	DC bus abnormal	0: Normal; 1: Abnormal
	Bit 9	System transfer	0: Normal; 1: Transfer
	Bit 10	Parallel board fault	0: Normal; 1: Fault
	Bit 11	Parallel connect fault	0: Normal; 1: Fault
	Bit 12	Parallel comm. fail	0: Normal; 1: Fault
	Bit 13	Bypass over current	0: Normal; 1: Over current
	Bits 15/14	LBS Active/Fault	00: Not Active 01: Active 10: Fault
1033	Bit 0	Bypass induct overtemp.	0: Normal; 1: Overtemp
	Bit 1	Static Sw. overtemp.	0: Normal; 1: Overtemp
	Bit 2	Bypass feedback fault	0: Normal; 1: Fault
	Bit 3	INV. drive circuit fault	0: Normal; 1: Fault
	Bit 4	Inverter comm. fail	0: Normal; 1: Fault
	Bit 5	System Battery low pre-warning	0: Normal; 1: Warning
	Bit 6	EPO	0: Normal; 1: EPO
	Bit 7	Ambient overtemp.	0: Normal; 1: Overtemp.
	Bits 9/8	Battery life	00: Normal 01: Battery needs replacement 10: Life span terminates
	Bit 10	Battery overtemp.	0: Normal; 1: Overtemp.
	Bit 11	Battery ground fault	0: Normal; 1: Fault
	Bit 12	Battery fuse fail	0: Normal; 1: Fault
	Bits 14/13	BCB status	00: BCB not connected 01: BCB closed 10: BCB open
	Bit 15	Output fuse fail (no use)	0: Normal; 1: Fault

ID	Bit	Item	Value
1034	Bit 0	Bus capacitor over voltage	0: Normal; 1: Fault
	Bit 1	DC bus over voltage	0: Normal; 1: Fault
	Bit 2	Bus short-circuit fault(no use)	0: Normal; 1: Fault
	Bit 3	Input current uneven	0: Normal; 1: Fault
	Bit 4	Output capacitor need maintenance	0: Normal; 1: Fault
	Bit 5	Input filter transfer time-out	0: Normal; 1: Time-out
	Bit 6	Battery SCR fault	0: Normal; 1: Fault
	Bit 7	PFC mode abnormal	0: Normal; 1: Fault
	Bit 8	Equalize charge overtime	0: Normal; 1: Fault
	Bits 15~9	Not use	

3. UPS status data

ID	Bit	Item	Value
1040	Bits 2/1/0	Operation mode	000: Neither Normal nor Battery mode 001: Normal mode 010: Battery mode 011: Bypass mode 100: Source share mode
	Bit 3	Battery selftest	0: Not under test 1: Under test
	Bits 5/4	Boost/float charge	00: Float charge 01: Boost charge 10: Not charging
	Bit 6	Turn-on/off	0: Turn-on; 1: Turn-off
	Bit 7	Generator connection	0: Connected 1: Not connected
	Bit 8	Input breaker state	0: Open; 1: Closed
	Bit 9	Maintenance bypass breaker state	0: Open; 1: Closed
	Bit 10	Bypass breaker state	0: Open; 1: Closed
	Bit 11	Output breaker state	0: Open; 1: Closed
	Bits 13/12	Parallel system operation mode	00: Normal mode 01: Battery mode 10: Bypass mode 11: No output
	Bits 15/14	No use	
1041	Bits 2/1/0	Bypass rotary switch state	000: Closed 001: Under test 010: Normal 011: Bypass state 100: Maintenance state
	Bit 3	Filter state	0: Not Connected 1: connected
	Bit 4	Sleep state	0: Not Sleep 1: Sleep
	Bit 5	Rectifier work state	0: normal mode 1: PFC mode
	Bits 15~6	No use	

4. UPS analog data

ID	Byte	Item	Value
1050	2	AC output phase voltage A	2200 corresponds to 220.0Vac
1051	2	AC output phase voltage B	2200 corresponds to 220.0Vac
1052	2	AC output phase voltage C	2200 corresponds to 220.0Vac
1053	2	AC output current A	1000 corresponds to 100.0A
1054	2	AC output current B	1000 corresponds to 100.0A
1055	2	AC output current C	1000 corresponds to 100.0A
1056	2	Battery voltage	1000 corresponds to 100Vdc
1057	2	Output frequency (3 phases the same)	5000 corresponds to 50.00Hz
1058	2	AC input line voltage AB	3800 corresponds to 380.0Vac

ID	Byte	Item	Value
1059	2	AC input line voltage BC	3800 corresponds to 380.0Vac
1060	2	AC input line voltage CA	3800 corresponds to 380.0Vac
1061	2	Phase A input current	1000 corresponds to 100.0A
1062	2	Phase B input current	1000 corresponds to 100.0A
1063	2	Phase C input current	1000 corresponds to 100.0A
1064	2	Input frequency (3 phases the same)	5000 corresponds to 50.00Hz
1065	2	Total input power factor	100 corresponds to 1
1066	2	Phase A bypass voltage	2200 corresponds to 220.0Vac
1067	2	Phase B bypass voltage	2200 corresponds to 220.0Vac
1068	2	Phase C bypass voltage	2200 corresponds to 220.0Vac
1069	2	Bypass frequency (3 phases the same)	5000 corresponds to 50.00Hz
1070	2	Battery current	1000 corresponds to 100.0A
1071	2	Phase A output power factor	100 corresponds to 1
1072	2	Phase B output power factor	100 corresponds to 1
1073	2	Phase C output power factor	100 corresponds to 1
1074	2	Module Phase A output peak value	100 corresponds to 1
1075	2	Module Phase B output peak value	100 corresponds to 1
1076	2	Module Phase C output peak value	100 corresponds to 1
1077	2	Module Phase A output active power	10000 corresponds to 100.00kW
1078	2	Module Phase B output active power	10000 corresponds to 100.00kW
1079	2	Module Phase C output active power	10000 corresponds to 100.00kW
1080	2	Module Phase A output apparent power	10000 corresponds to 100.00kVA
1081	2	Module Phase B output apparent power	10000 corresponds to 100.00kVA
1082	2	Module Phase C output apparent power	10000 corresponds to 100.00kVA
1083	2	Module Phase A output load percentage	1000 corresponds to 100.0%
1084	2	Module Phase B output load percentage	1000 corresponds to 100.0%
1085	2	Module Phase C output load percentage	1000 corresponds to 100.0%
1086	2	Module Phase A output reactive power	10000 corresponds to 100.00kVA
1087	2	ModulePhase B output reactive power	10000 corresponds to 100.00kVA
1088	2	ModulePhase C output reactive power	10000 corresponds to 100.00kVA
1089	2	System Phase A output active power	10000 corresponds to 100.00kW
1090	2	System Phase B output active power	10000 corresponds to 100.00kW
1091	2	System Phase C output active power	10000 corresponds to 100.00kW
1092	2	System Phase A output apparent power	10000 corresponds to 100.00kVA
1093	2	System Phase B output apparent power	10000 corresponds to 100.00kVA
1094	2	System Phase C output apparent power	10000 corresponds to 100.00kVA
1095	2	System Phase A output reactive power	10000 corresponds to 100.00kVA
1096	2	System Phase B output reactive power	10000 corresponds to 100.00kVA
1097	2	System Phase C output reactive power	10000 corresponds to 100.00kVA
1098	2	Battery autonomy	1 corresponds to 1 minute
1099	2	Battery temperature	1000 corresponds to 100 Celsius degrees
1100	2	Ambient temperature	1000 corresponds to 100 Celsius degrees
1101	2	Battery aging ratio	10000 corresponds to 100

Chapter 4 Troubleshooting

1. After plugging the adapter in the SNMP slot of the UPS or FLP, the yellow LED (equipment communication LED) of the adapter does not illuminate.

Cause analysis and solution: the UPS or FLP is off or has no mains input. Please turn on the UPS or FLP; if the UPS or FLP cannot be turned on, please connect the mains input to the UPS or FLP and try again.

2. After the adapter is installed, the yellow LED (equipment communication LED) of the adapter illuminates, and the host monitoring software cannot monitor the UPS or FLP normally.

Cause analysis and solution: the UPS or FLP is on, but the communication between the adapter and the UPS or FLP has not been established. Please pull out the adapter, check for the presence and proper insertion of the chip on the PCB. If the check proves satisfactory, the adapter must be damaged, please contact the customer service center of Emerson.

3. After the adapter is installed, the yellow LED (equipment communication LED) of the adapter flashes about once per 5s, and the host monitoring software cannot monitor the UPS or FLP normally.

Cause analysis and solution: the yellow LED flashing once per 5s indicates the adapter cannot detect the UPS or FLP or recognize the UPS or FLP type. Please check if the adapter matches the UPS or FLP type according to the hardware description in section 1.3. The adapter can recognize the UPS or FLP type. After it recognizes the UPS or FLP, the yellow LED will flash quickly, about once per 1s.

4. The yellow LED (equipment communication LED) flashes quickly, the green LED (host communication LED) is off.

Cause analysis and solution: the adapter is not properly connected to the host computer. Please properly connect the adapter to the host computer following the instructions provided in section 2.3.3.

5. The yellow LED (equipment communication LED) flashes quickly, the green LED (host communication LED) flashes too, but the host monitoring software cannot monitor the UPS or FLP normally.

Cause analysis and solution: the yellow LED flashing quickly indicates the communication between the adapter and the UPS or FLP is normal; if the green LED flashes but the host monitoring software cannot detect the UPS or FLP data, please check that: 1) the communication cable is properly connected between the adapter and the host computer; 2) the adapter's physical address and communication baud rate settings are the same as those set in the host monitoring software; 3) the adapter's physical address setting does not conflict with that of any other monitored equipment (applicable only in RS485 cascade connection).

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