Spec No.:XM2502110021-1

TECHNICAL SPECIFICATION

ESPS48300_DS803 Embedded switching power supply

Version	Date	Prepared	Reviewed	Approved	Accepted
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1. Product introduction

1.1. Overview

ESPS48300_DS803 switching power supply is an embedded switching power supply that provides power for －48V DC series communication equipment. The whole machine includes basic AC power distribution, rectifier module, monitoring module and DC power distribution, which is a complete switching power supply system. There are 6 module slots in total, which supports mixed insertion of rectifier module and photovoltaic module to achieve fast light stacking.

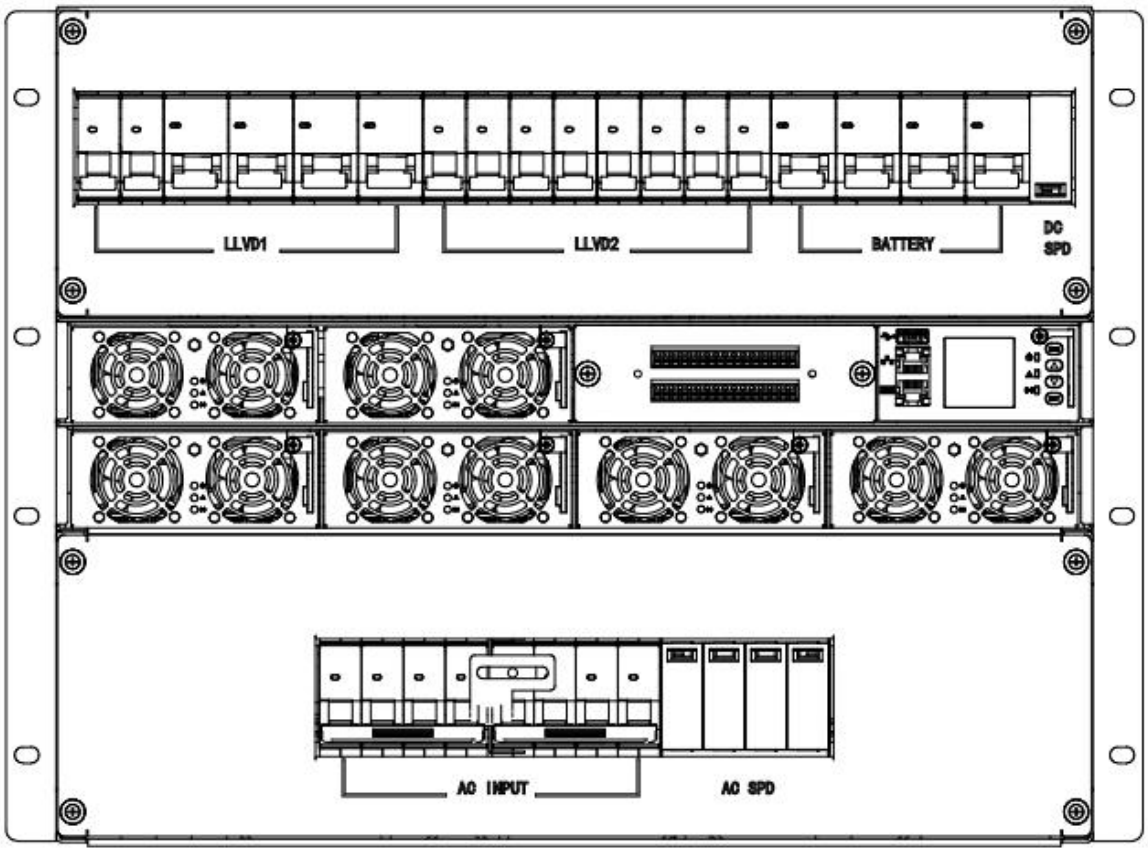

Figure 1-1 Product Appearance Schematic

1.2. System Features

The main features of ESPS48300_DS803 switching power supply are as follows:

- Wide voltage range 85V AC ~ 300V AC.
- Complete AC and DC lightning protection design.
- Battery charger (suitable for both lead and lithium batteries)
- Networking design, providing one COM interface, RS485 interface.
- Supports SNMP protocol and power supply protocol, can communicate with ZTT network management platform or third-party network management, flexible networking, remote management and unattended operation.
- Support LCD interface display and key operation.
- The power factor of the rectifier module reaches 0.99.
- Support hot-swap of the rectifier module, solar converter module and monitoring module.

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1.3. Working Principle

The working principle of the power supply system is shown in Figure 1-2. AC power enters into the rectifier module through the AC input circuit breaker; the rectifier module converts the AC power into -48V DC power, which is distributed to multiple loads by the DC power distribution unit.

When the AC power supply is normal, the rectifier module not only supplies power to the DC loads, but also provides charging current for the battery. When the AC power is cut off, the rectifier module stops working and the battery supplies power to the DC loads. When the AC power is restored, the rectifier module supplies power to the DC load again and charges the battery to replenish the consumed power.

The monitoring unit monitors the operation status of each component of the power supply system in real time and carries out intelligent control accordingly. If there is any abnormality, the alarm signal is reported in time. Meanwhile, the monitoring unit controls and regulates the temperature control unit according to the temperature monitored by the sensors, so that the temperature inside the cabinet is kept within the range suitable for the work of the equipment.

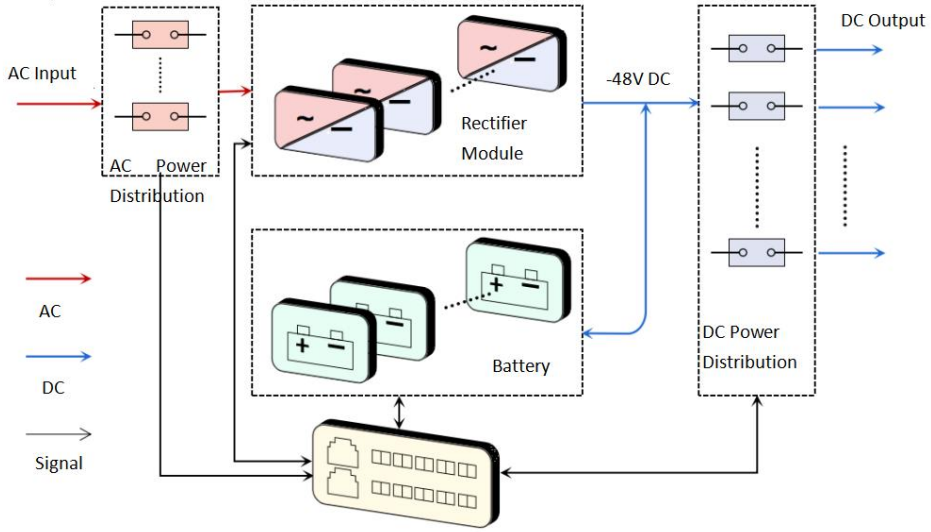

Figure 1-2 Schematic diagram of the working principle of the power supply system

1.4. System Configuration

The appearance of the ESPS48300_DS803 switching power supply system is shown in Figure 1-3.

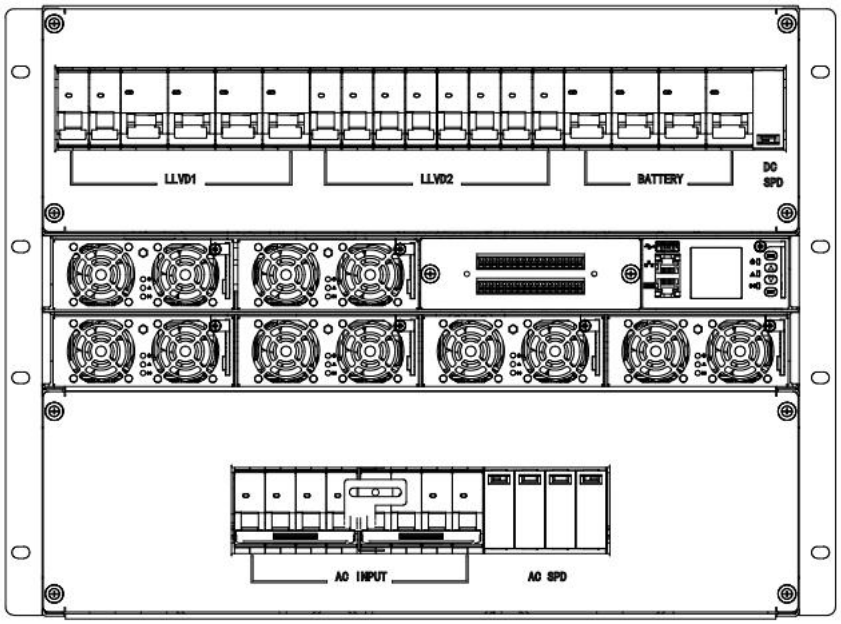

Figure 1-3 ESPS48300_DS803 Switching Power Supply System Diagram

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The ESPS48300_DS803 switching power supply system configuration is shown in Table 1-1.

Table 1-1 Switching Power Supply System Configuration Table

	Name	Specification
1	**System**	
1.1	Installation Method	Standard 19 inch rack
1.2	Busbar/Conductor Cross Section	Complies with IEC60950, 99.9% pure copper, nickel plated
1.3	Number Of Slots For Rectifier	06, support RM4850 rectifier module & PVM4000 solar converter module
1.4	Monitoring Unit	ZTKD PMU-01, with LCD display to show voltage, current, alarm, battery status, rectifier module and current operation
1.5	User Interface Module	ZTKD SIU-02
1.6	EMC	EN 55032, EN 55035, EN IEC 61000-3-2, EN 61000-3-3
1.7	Lvd Standard	EN IEC 62368-1
1.8	Environmental Friendly	RoHS
1.9	Soft Start	There are soft start function on the rectifier module and can be set.
1.10	Shunt	300A
1.11	Grounding nut	M8/6 for 25mm2 cable
2	**AC Distribution**	
2.2	Input Voltage	220/380 VAC, 3 phase - 4wire
2.3	Operating Frequency	45 ÷ 65 Hz
2.4	AC Input MCB	MCB 4P/63A, Icu =10kA, Uimp=4kV,electrical life=6000 times,IEC60898-1/IEC60947-2
2.5	AC SPD(L-N & N-PE)	MOV,In=20kA (08/20μs),IEC61643 class II, with color indicator and dry contact
3	**DC Output**	
3.1	Power System Types	- 48 VDC
3.2	Rated System Current	300A(at 54VDC)
3.3	DC SPD for DC Output	MOV,In ≥ 20kA (08/20μs), IEC61643 classII, with color indicator and dry contact
3.4	DCDU Cover	There is a cover for the output distribution CB at the power cabinet
3.5	LVD Contactor	300A*2(NC type), one for LLVD priority, and the another for LLVD non-priority
3.6	DC MCB	1P, Uimp=4kV, electrical life ≥10000 times, IEC 60898-2/IEC 60947 -2
3.7	LLVD Priority MCB	1P DC Circuit Breaker, 32A*4+16*4, Icu=6kA, TANGENT TGBG-63A
3.8	LLVD Non-priority MCB	1P DC circuit breaker, 125A*4+63A*2, TANGENT TGBG-125A(Icu= 6kA), TGBG-63A(Icu= 4.5kA)

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3.9	Battery MCB	In ≥ 125A*4, Icu =10kA
3.10	Cable Wire	Front access (both the CB and 0V busbar)
3.11		0V busbar with Pre-connected nuts
3.12	Cable Routing	Top to bottom
4	**Accessories**	
4.1	AC Input Cable	Cu/XLPE/PVC, 4x16mm2,6m, IEC 60228, single core DC resistance≤ 1.15 Ω/km @20°C .
4.2	Battery DC Cable	Power cord connecting negative battery terminal to power cabinet, blue,Cu/PVC,1x25mm2, 6m DC cable to connect negative pole of battery with distribution unit,black,Cu/PVC,1x25mm2, 6m IEC 60227/ IEC 60228, DC resistance≤ 0.78 (Ω/km)@ 20°C
4.3	Grounding Cable	Green yellow, Cu/PVC,1x25mm2,3m,IEC 60227/IEC 60228, DC resistance≤ 0,727 (Ω/km)@20°C
4.4	Cable Terminal(Copper Lug)	1 package: Cable terminal for AC 16mm2 : 08pcs Cable terminal for DC M25: 4pcs Cable terminal for DC M25 SC25: 14pcs
4.5	MIB	1
4.6	Controller Cable	LAN cable with RJ45, Cat 5, 8 meters
4.7	Temp Sensor	01 sensor for environment and 01 sensor for battery with maximum allowable temperature error ≤ 1℃

2. Components Introduction

2.1. Rectifier Module RM4850

For details, please refer to ***06-1_ZTT recitfier module(3KW) RM4850 XM2502110021-1-A***

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2.2. Monitoring Module ZTKD PUM-01

The appearance of the ZTKD PUM-01 monitoring module is shown in Figure 2-1, and the panel is shown in Figure 2-2.

For details, please refer to ***08-1_Rectifier Controller ZTKD PMU-01 XM2502110021-1-A.***

Figure 2-1 Appearance of a monitoring module

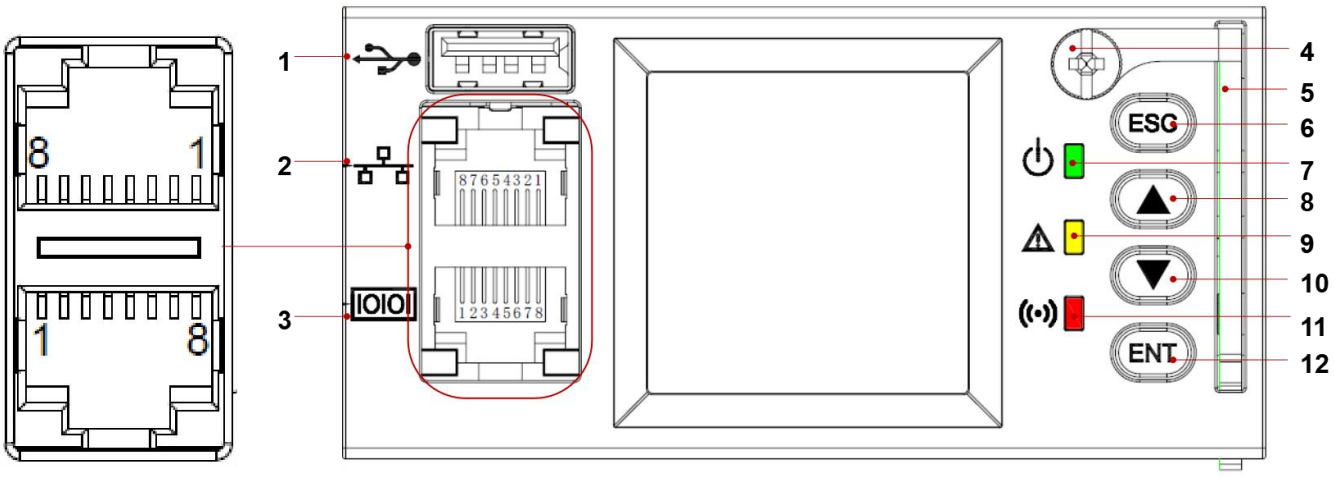

Figure 2-2 Panel of the monitoring module

1	USB Interface	5	Handle	9	Alarm Indicator
2	Ethernet Interface	6	ESC exit button	10	DOWN button
3	RS485 interface	7	Power Indicator	11	Alarm Indicator
4	Fastening screws	8	UP button	12	ENTER button

Table 2-1 describes the definition of monitoring indicators.

Table 2-1 Indicators on the panel

Name	Screen print	Color	Definition
Power indicator		Green	System Operating Indicators
Alarm Indicator		Yellow	General Alarms
Alarm indicator		Red	Serious or emergency alarms

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Table 2-2 defines the buttons on the LCD panel.

Table 2-2 Panel Key Definitions

Name	Screen print	Definition
Confirmation key	ENT	Confirm or execute
Up Arrow Key	▲	Cursor up or select previous
Down arrow key	▼	Cursor down or select next
Exit key	ESC	Exit or Cancel

USB Communication Interface Definition

Located on the lower left side of the module panel, using the USB standard A-type connector, the interface is shown in Table 2-3.

Table 2-3 USB connector interface definition

No.	Name	Definition
1	VCC	Power Positive
2	D-	USB Data Negative
3	D+	USB Data Positive
4	GND	Power Ground

Ethernet interface: located on the upper left side of the module panel, using RJ45 connector, the interface is shown in Table 2-4.

Table 2-4 Ethernet connector interface definition

No.	Name	Definition
1	TX+	Write Signal Positive
2	TX-	Write signal negative
3	RX+	Read signal positive
4	/	NC
5	/	NC
6	RX-	Read signal negative
7	/	NC
8	/	NC

Panel RS485 signal: located on the left side of the module panel below, using RJ45 connector, the communication protocol uses the electrical total protocol, modbus protocol can be provided according to customer demand, the interface is shown in Table 2-5.

Table 2-5 RS485 connector interface definition

Pin position	Signal
1	485_1_A
2	485_1_B
3	NA
4	NA
5	NA
6	NA
7	485_2_A
8	485_2_B

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2.3. User Interface Module SIU-02

The SIU-02 user interface module panel is shown in Figure 2-3, and the interface definitions are shown in Table 2-6.

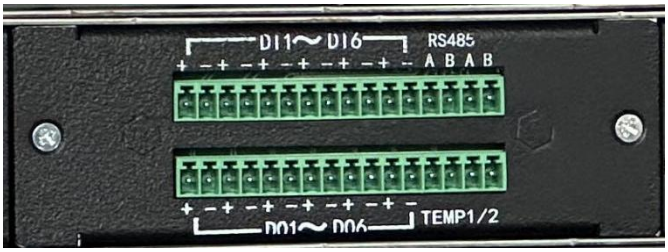

Figure 2-3 User Interface Module Panel

Table 2-6 User Interface Module Interface Definitions

Screen print	Definition	Function
DI	DI_INPUT1	Input alarm dry contact 1
	DI_INPUT2	Input alarm dry contact 2
	DI_INPUT3	Input alarm dry contact 3
	DI_INPUT4	Input alarm dry contact 4
	DI_INPUT5	Input alarm dry contact 5
	DI_INPUT6	Input alarm dry contact 6
DO	DO_OUT1	AC Input Alarm
	DO_OUT2	AC Low
	DO_OUT3	Rectifier Fail
	DO_OUT4	Output Voltage Low
	DO_OUT5	CB Trip
	DO_OUT6	Battery Temp. High
South RS485	RS485_1	485 Communication Port, Left B, Right A
	RS485_2	485 Communication Port, Left B, Right A
TEMP	TEMP1	Ambient temperature sampling port
	TEMP2	Battery Temperature Sampling Port

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