

交流PMS功率管理系统 AC PMS power management system

► 概述

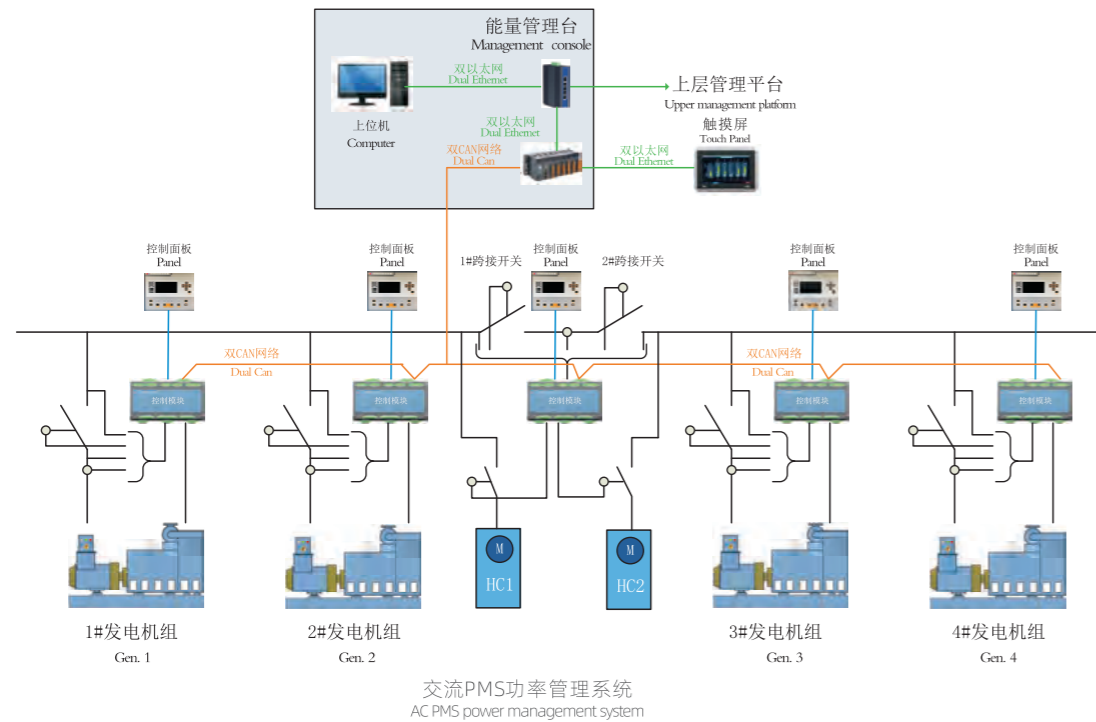
Overview

交流PMS功率管理系统产品是一个集能量测量、控制、保护及管理于一体的系统。系统能提供稳定、可靠的高品质电能，保障电力设备的可靠正常运行和船舶航行的安全。系统采用双层网络架构：CAN和以太网，每层网络均为冗余配置。系统功能全面、操作简捷，界面友好，整体性能稳定、运行可靠、维护方便，是一个综合性价比极高的船舶能量管理系统解决方案。

AC PMS power management system is a system integrating energy measurement, control, protection and management. The system can provide stable, reliable and high-quality power to ensure the reliable and normal operation of power equipment and the safety of ship navigation. The system adopts two-layer network architecture, Can and Ethernet, each layer of network is redundant configuration; the system has comprehensive functions, simple operation, friendly interface, stable overall performance, reliable operation and convenient maintenance, which is a comprehensive cost-effective solution for ship energy management system.

► 系统架构

System architecture



► 产品特点

Product features

- 基于国产芯片和软件平台开发设计，实现系统的自主可控；
Based on chip and software platform made in china, the system can be Independent and controllable;
- 系统功能齐全、性能稳定可靠、操作简单；
Complete functions, stable and reliable performance and simple operation;
- 系统依据各区跨接开关的状态，实现分区及整区能量管理功能；
According to the status of the Bus-switch in each area, the energy management function of the area can be realized;

- 系统网络采用双层双网络冗余架构，确保系统运行稳定、可靠；
Dual layer and dual network redundancy architecture is adopted to ensure the stable and reliable operation of the system;
- 人机界面集多项功能于一体，便于操作及后期维护。
The touch panel integrates multiple functions, which is convenient for operation and later maintenance.

► 产品功能

Product function

- 具有手动、半自动和自动三种控制模式；
Three control modes: manual, semi-automatic and automatic;
- 在自动控制模式下发电机组具有自动启动、同步合闸、解列分闸、停机功能；对并联机组具有自动调频、调压、有功无功分配等综合调控功能；
Under the automatic control modes, the generator set has the functions of automatic start-up, synchronous closing, splitting and opening, and shutdown; the parallel unit has the functions of automatic frequency regulation, voltage regulation, active and reactive power distribution, etc;
- 具有发电机组启动连锁、低压、高温、超速、差动、逆功、过/欠压、过/欠频、过载等保护功能；
Protection functions such as generator set startup interlock, low voltage, high temperature, overspeed, differential, reverse power, over / under voltage, over / under frequency, overload, etc;

- 具有重载询问、分级卸载、分级加载、推进功率限制和推进功率突降等能量管理功能；
Energy management functions such as heavy load inquiry, grading unloading, grading loading, propulsion power limitation and sudden drop of propulsion power;
- 人机交互界面具有显示、记录、查询、控制、报警、故障诊断及系统参数设置等功能。
The man-machine interface has the functions of display, record, query, control, alarm, fault diagnosis and system parameter setting .

▶ 产品组成

Product composition

序号 SN	设备名称 Device name	型号 Type	备注 comments
1	能量管理台 Energy management console	RT-PPM-GLT	含计算机 Including computer
2	控制器 Controller	RT-PPM-G	
3	控制器面板 Panel	RT-PPM-G-M	
4	RT-PAC	RT-PAC	
5	触摸屏 Touch Panel	X2PRO7	

▶ 技术指标

Technical index

■ 工作电源

Power supply

管理台电源: AC220V (+6% ~ -10%), (50/60Hz) ±8%

Computer power:

控制器电源: DC24V双电源输入, 电源输入范围 DC18V ~ DC36V

Controller POWER: DC24 V dual power input, power input range DC18 V ~ DC36 v

■ 工作环境

Environment

环境温度: -10 ~ 55°C

Temperature:

环境湿度: ≤95%

Humidity:

■ 并联控制技术指标

Technical index of parallel control

电压差: $\leq \pm 2.5\%V_n$

Voltage diff:

频率差: $+0.15\text{Hz} \leq f \leq +0.35\text{Hz}$

Frequency diff:

相位差: $-15^\circ \leq \alpha \leq 0^\circ$

phase diff:

有功分配: $\pm 5\%P_n$

Active power distribution:

无功分配: $\pm 7\%Q_n$

Reactive power distribution:

■ 电参数采集精度

Sampling accuracy of electrical parameters

电压: 1%

Voltage:

电流: 1%

Current:

频率: 0.1%

Frequency:

有功功率: 1.5%

Active power:

无功功率: 1.5%

Reactive power:

■ 数字量输入接口

Digital input interface

数量: 20

Quantity:

接口: 24VDC, 低电平有效

Interface: 24VDC, active low

■ 数字量输出接口

Digital output interface

数量: 8

Quantity:

触点容量:

Contact rating:

开关合分继电器: 8A/250VAC

Switch on / off relay:

常规继电器: 2A/30VDC, 0.5A/125VAC

General relay:

■ 电压测量接口

Voltage measurement interface

测量类型: 发电机电压

汇流排电压

Measuring type: generator voltage

bus voltage

两次侧电压: 100VAC

Secondary rate voltage:

■ 电流测量接口

Current measurement interface

测量类型: 发电机进出电流

Measuring type: generator in and out current

两次侧电流: 5A

Secondary rated current:

■ 通讯接口

RS485: 2路, 一路和控制器面板通讯, 一路留给外部接口使用

2 channels, one for communication with the controller panel and the other for external interface

CAN: 2路, 速率: 125K, CAN2.0B

2 channels, speed: 125k, CAN2.0B

Ethernet: 2路, 速率: 10/100MB/S, MODBUS TCP

2 channels, speed: 10 / 100MB / s, Modbus TCP

直流PMS功率管理系统 DC PMS power management system

概述

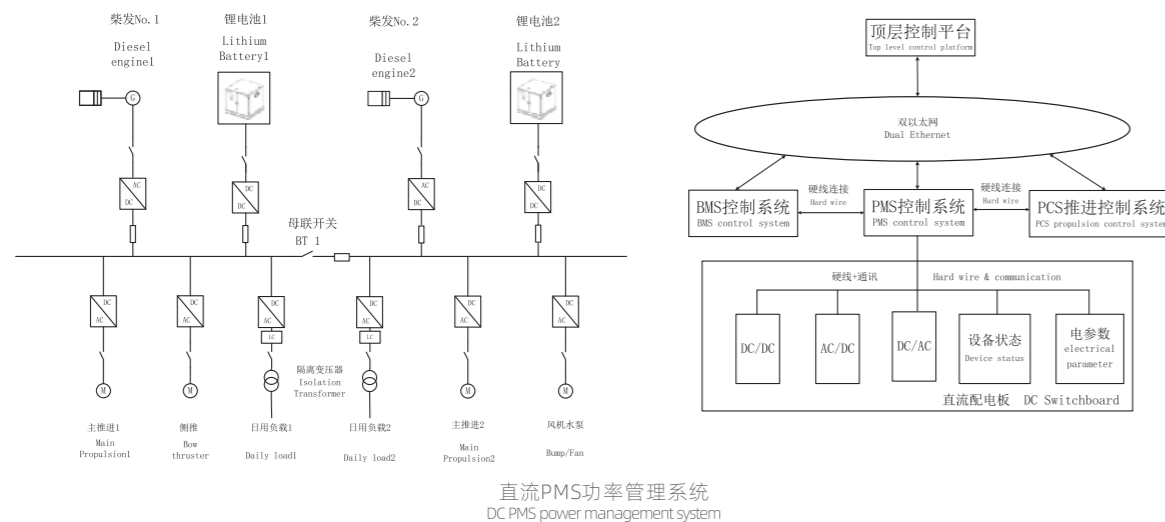
Overview

直流PMS功率管理系统产品采用全新的控制算法和思路实现直流电网中变速发电机、锂电池等供电设备的并联运行。系统基于RT-PAC产品平台开发，主要硬件包括PAC及触摸屏，实现发电、配电和用电设备之间的协调运作。

DC PMS power management system adopts a new control algorithm and idea to realize the parallel operation of variable speed generator, lithium battery and other power supply equipment in DC power grid. The system is based on the PAC product platform development, the main hardware includes PAC and touch screen, to achieve the coordinated operation of power generation, distribution and electrical equipment.

系统架构

System architecture



产品特点

Product features

- 基于国产芯片和软件平台开发设计，实现系统的自主可控；
Based on chip and software platform made in china, the system can be Independent and controllable;
- 功能齐全、性能稳定可靠、操作简单；
Complete functions, stable and reliable performance and simple operation;
- 接口多样组网灵活，模块化设计理念，自由裁剪；
Various interfaces, flexible networking, modular design concept and free cutting;
- 网络采用冗余架构，确保系统运行稳定、可靠；
The network adopts redundant architecture to ensure the stable and reliable operation of the system;
- 人机界面集多项功能于一体，便于操作及后期维护。
The touch panel integrates multiple functions, which is convenient for operation and later maintenance.

产品功能

Product function

- 控制模式切换（手动、半自动、自动）；
Control mode switching (manual, semi-automatic and automatic);
- 直流母线预充；
DC bus pre charge;
- 发电设备启动、停止（发电机、电池）；
Start and stop of power generation equipment (generator and battery);
- 发电设备并网、解列、负荷分配；
Parallel, deload and distribution of generation equipment;
- 日用逆变器并网；
The daily inverter parallel;
- 非重要负载跳闸；
No essential load trip;
- 推进负载功率限制；
The propulsion load power limit;
- 人机交互具有显示、记录、查询、控制、报警、故障诊断及系统参数设置等功能。
The man-machine interface has the functions of display, record, query, control, alarm, fault diagnosis and system parameter setting.

技术指标

Technical index

- 技术指标
Technical index
- 工作电源：DC 24V±20%；
Power supply:
- 环境温度：-10 ~ 55°C；
Temperature:
- 环境湿度：≤95%；
Humidity:
- 有功分配精度：±5%Ph；
Active power distribution Accuracy :
- 无功分配精度：±7%Qn；
Reactive power distribution accuracy:
- 参数采集相应时间≤2s。
Corresponding time of parameter acquisition.

系统接口

System interface

- 数字量输入接口：24VDC 高电平有效；
Digital input: 24 VDC high level active;
- 数字量输出接口：2A/30VDC, 0.5A/125VAC；
Digital output : 2A / 30VDC, 0.5a/125vac;

模拟量输入接口：

温度测量 PT100, 电压输入：0~5V、1~5V、-5V~5V、0V~10V、-10V~10V, 电流输入：4~20mA、0~20mA、0~10mA；
Analog input : temperature measurement PT100, voltage input: 0 ~ 5V, 1 ~ 5V, - 5V ~ 5V, 0V ~ 10V, - 10V ~ 10V, current input: 4 ~ 20mA, 0 ~ 20mA, 0 ~ 10mA;

模拟量输出接口：

电压输出：0~5V、1~5V、-5V~5V、0V~10V、-10V~10V, 电流输出：4~20mA、0~20mA、0~10mA；
Analog output : voltage output: 0 ~ 5V, 1 ~ 5V, - 5V ~ 5V, 0V ~ 10V, - 10V ~ 10V, current output: 4 ~ 20mA, 0 ~ 20mA, 0 ~ 10mA;

通讯接口：

Communication interface:

RS485通讯：115200 pbs ModBus-RTU；
RS485：
CAN通讯：125k bps CAN2.0B
Can：
以太网通讯：10/100MB/S, Modbus-Tcp。
Ethernet: