华思未来
HUASI FUTURE

产品资料 / PRODUCT SHEET
测试系统 / TEST SYSTEMS



AI-POWERED UAV TEST SYSTEM

AI 智能体无人机专家系统平台

UAV Expert System Platform with AI Agents

基于 AI 智能体的无人机自动化性能测试平台

Automated UAV performance testing with AI agents

统一编排测试用例并联动仪器，自动采集电气与动力数据、识别异常和生成报告，让同一工况可以重复验证。

Coordinate test cases and instruments in a single workflow. The system captures electrical and propulsion data, detects anomalies and generates reports for repeatable validation under the same conditions.

95%
测试自动化率
Test automation

1000 TOPS
AI 算力
AI performance

200 MHz
示波器带宽
Oscilloscope bandwidth

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01 产品概述

Product overview



平台面向民用无人机的研发验证、产线质检与第三方检测，将 AI 智能体、本地算力和精密测试仪器集成到一套实验室测试系统中。

The platform combines AI agents, local computing and precision instruments in one laboratory test system for civil UAV development, production quality control and independent testing.

测试人员启动任务后，系统按用例联动仪器、采集数据并识别异常，保存原始数据和日志，生成可复核的测试报告。

Once an operator starts a test, the system coordinates instruments according to the selected test case, captures measurements and detects anomalies. It saves raw data and logs and produces a report for review.

02 自动化测试能力

Automated testing capabilities

将分散的仪器操作、人工记录和报告整理纳入统一流程，便于研发与质检团队按相同条件复测和对比结果。

One workflow brings together instrument control, recordkeeping and reporting, so engineering and quality teams can rerun tests under the same conditions and compare results.

测试用例复用

Reusable test cases

按测试项目统一工况与采集口径，便于不同批次和样机在相同条件下复测。

Use consistent test conditions and data collection criteria to compare prototypes and production batches.

多仪器协同

Coordinated instruments

统一控制示波器、电子负载和万用表，把信号波形与电气读数记录在同一测试流程中。

Coordinated control of the oscilloscope, electronic load and multimeter records waveforms and electrical readings in a single test workflow.

异常识别

Anomaly detection

在测试过程中记录异常及关联数据，便于工程人员复核读数和波形。

The system records anomalies alongside the relevant data so engineers can review measurements and waveforms.

数据与报告追溯

Traceable data and reports

原始数据和测试日志自动保存，测试结果可汇总为统一格式的报告并打印。

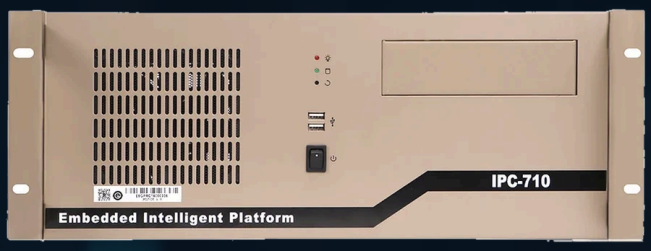
The system saves raw data and test logs automatically and can compile results into reports in a consistent format for printing.

03 柜内每一台，都是选型过的

Every instrument is selected for the task

工控机负责调度，示波器捕捉时序，电子负载复现工况，万用表提供精密读数。四台仪器各司其职。

The industrial PC orchestrates tasks, the oscilloscope captures timing, the electronic load reproduces operating conditions, and the multimeter provides precision readings.



主控 Controller

IPC-710 上架式 4U 工控机

IPC-710 rackmount 4U industrial PC

柜内主控负责执行测试流程、联动仪器并调度数据采集，适配实验室和产线的标准机柜。

The cabinet controller executes test workflows, coordinates instruments and schedules data acquisition in standard laboratory and production-line racks.

- 多串口、双网口与 VGA 接口
  Multiple serial ports, dual Ethernet ports and VGA
- 前后通风，支持 7×24 小时运行
  Front-to-rear ventilation; supports 24/7 operation
- 可按需扩展采集卡与运动控制卡
  Expandable with data acquisition and motion control cards



测量 Measurement

四通道数字示波器

Four-channel digital oscilloscope

200 MHz 带宽与 1 GS/s 采样率，用于观测飞控信号时序和稳态纹波。

200 MHz bandwidth and a 1 GS/s sample rate for observing flight-control signal timing and steady-state ripple.

- 四通道输入，支持同时观测多路信号
  Four input channels for simultaneous signal observation
- 波形与测量读数分区显示
  Separate display areas for waveforms and measurements
- 刻度网格辅助判读波形细节
  Graticule helps interpret waveform details



负载 Load

可编程直流电子负载

Programmable DC electronic load

0–150 V、0–60 A、3000 W，用于测试整机负载极限和复现高低负载切换。

0–150 V, 0–60 A, 3000 W for testing aircraft load limits and reproducing transitions between high and low loads.

- 支持恒流、恒压、恒阻和恒功率模式
  Supports constant current, voltage, resistance and power modes
- 红黑分极性的螺纹输入端子
  Red and black threaded input terminals identify polarity
- 同屏读取电压、电流、功率与电阻
  Voltage, current, power and resistance readings on one screen



精度 Precision

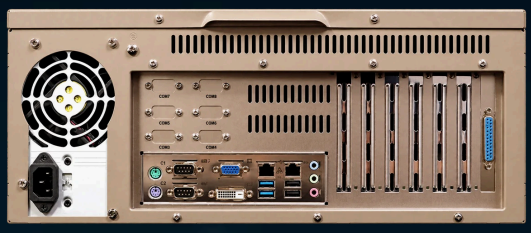
台式数字万用表

Benchtop digital multimeter

六位半读数，直流电压精度 0.001%、电阻精度 0.002%，用于核对板级电气参数。

6½-digit readings, 0.001% DC voltage accuracy and 0.002% resistance accuracy for verifying board-level electrical parameters.

- 绿色数码屏显示测量读数
  Green digital display shows measurement readings
- 四线制接线端子，电压和电流端子分组
  Four-wire terminals with separate voltage and current groups
- 测量功能按键分区布置
  Grouped buttons for measurement functions



柜内主控后面板：工业接口与扩展插槽 Cabinet controller rear panel: industrial interfaces and expansion slots

04 技术参数
Technical specifications

参数 Parameter	规格 Specification
算力工作站 Computing workstation	**英伟达 GB10，1000 TOPS AI 算力，128GB 统一内存，1TB SSD** NVIDIA GB10, 1000 TOPS AI performance, 128 GB unified memory, 1 TB SSD
数字示波器 Digital oscilloscope	**四通道，带宽 200MHz，采样率 1GS/s** Four channels, 200 MHz bandwidth, 1 GS/s sample rate
可编程直流电子负载 Programmable DC electronic load	**0–150V / 0–60A / 3000W，恒流、恒压、恒阻、恒功率** 0–150 V / 0–60 A / 3000 W; constant current, voltage, resistance and power modes
高精度台式万用表 High-precision benchtop multimeter	**六位半，直流电压精度 0.001%，电阻精度 0.002%** 6½ digits; DC voltage accuracy 0.001%, resistance accuracy 0.002%
高清工业显示器 High-resolution industrial display	**27 英寸 4K，广色域，支持 7×24 小时运行** 27-inch 4K, wide color gamut, supports 24/7 operation
工业级专用打印机 Dedicated industrial printer	**A4 高清激光，报告与数据台账批量打印** High-resolution A4 laser printing; batch output of reports and data logs
测试流程自动化率 Test workflow automation rate	**95% 以上** Over 95%
部署环境 Operating environment	**18–28°C，湿度 40%–60%，接地电阻 ≤4Ω** 18–28°C, humidity 40%–60%, grounding resistance ≤4 Ω
质保与维护 Warranty and maintenance	**硬件 1 年质保、终身维护，AI 系统终身基础版本迭代** One-year hardware warranty, lifetime maintenance, and lifetime basic-version updates for the AI system

05 实验室测试项目
Laboratory tests

- 电池充放电性能
  Battery charge/discharge performance
- 整机功耗与负载极限
  Aircraft power consumption and load limits
- 电路板电压电流电阻
  Board voltage, current and resistance
- 飞控信号时序与稳定性
  Flight-control signal timing and stability
- 长时间工况稳定性
  Long-duration operating stability
- 高低负载切换适应性
  Adaptability to high/low load transitions

06 运行流程
Operating workflow

01
接入被测无人机
Connect the UAV under test

02
执行性能测试
Run the performance test

03
保存数据并生成报告
Save data and generate a report

04
按需评估辅助调参
Assess assisted tuning when needed

07 系统架构

System architecture

智能体下发测试任务，本地工作站提供推理算力，柜内仪器采集数据，测试结果最终汇入报告。

Agents issue test tasks, a local workstation provides inference computing, cabinet instruments acquire data, and test results are compiled into reports.

AI 智能体核心层

AI agent core layer

自动化测试算法、设备联动控制、异常识别与报告生成，包含部署与培训，是整个平台的调度中枢。

The platform's orchestration hub provides automated test algorithms, coordinated equipment control, anomaly detection and report generation, including deployment and training.

算力支撑层

Computing support layer

英伟达 GB10 算力工作站，1000 TOPS AI 算力、128GB 统一内存、1TB SSD，承载本地大模型推理与模型迭代。

An NVIDIA GB10 workstation with 1000 TOPS AI performance, 128 GB unified memory and a 1 TB SSD supports local large-model inference and iteration.

硬件采集测试层

Hardware acquisition and testing layer

智能测试柜与四通道示波器、可编程直流电子负载、六位半万用表完成电气与动力指标的高精度采集。

The test cabinet, four-channel oscilloscope, programmable DC electronic load and 6½-digit multimeter acquire high-precision electrical and propulsion measurements.

数据输出层

Data output layer

27 英寸 4K 工业显示器可视化监控，配合专用打印机完成报告与数据台账批量输出。

A 27-inch 4K industrial display provides visual monitoring, while a dedicated printer produces reports and data logs in batches.

08 系统组成

System composition

按承载、测量、算力与输出四份清单交付，柜内设备、线缆与接口一次配齐，到场即可开机。

Delivered against four lists covering housing, measurement, computing and output, with cabinet equipment, cables and interfaces supplied together for startup on arrival.

承载与供电

Housing and power

- 无人机专用智能测试柜
  Dedicated intelligent UAV test cabinet
- 稳压供电与信号隔离模块
  Regulated power and signal isolation module
- 过载保护与设备收纳舱
  Overload protection and equipment storage

测量与加载

Measurement and load control

- 四通道数字示波器
  Four-channel digital oscilloscope
- 可编程直流电子负载
  Programmable DC electronic load
- 六位半高精度台式万用表
  6½-digit high-precision benchtop multimeter

算力与输出

Computing and output

- 英伟达 GB10 算力工作站
  NVIDIA GB10 computing workstation
- 27 英寸 4K 工业显示器
  27-inch 4K industrial display
- 工业级专用打印机
  Dedicated industrial printer

智能体编排 · 仪器联动 · 报告闭环

Agent orchestration · Coordinated instruments · Complete reporting