

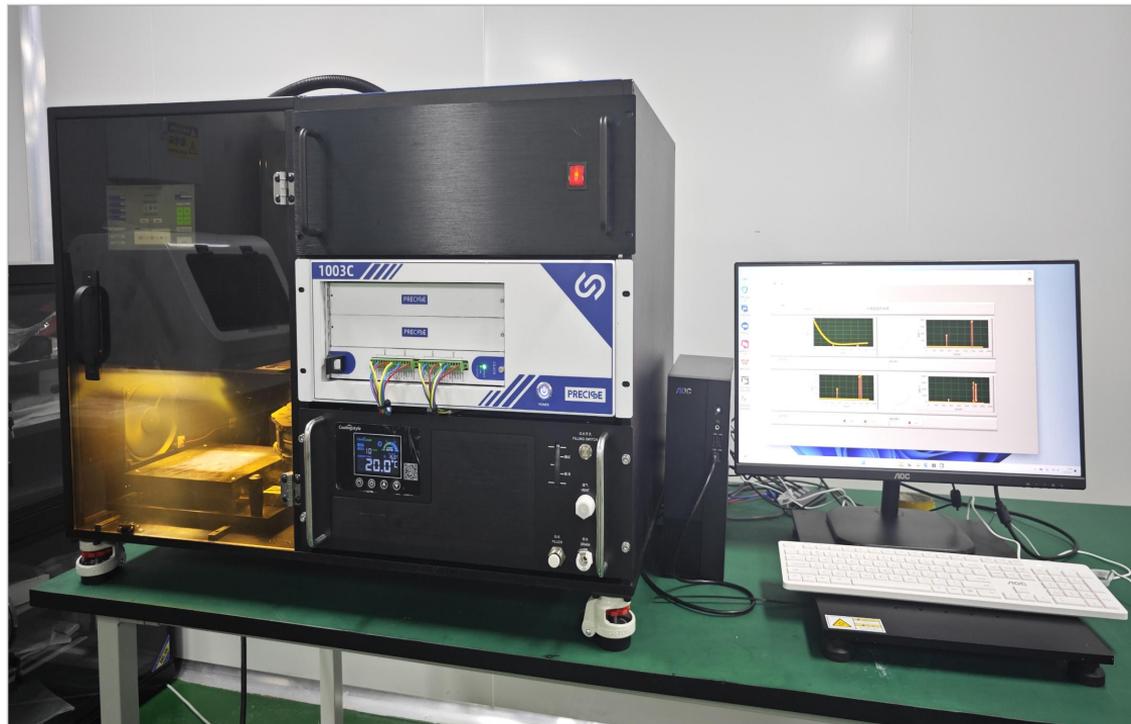
LECHENG INTELLIGENT

Multi-channel photovoltaic module IV+MPPT steady- state testing system

MCT Series Product Manual

Lecheng Intelligent Technology (Suzhou) Co., Ltd.

2025 Product Catalog



High-throughput automated testing solution specifically designed for

perovskites

High-throughput parallel testing

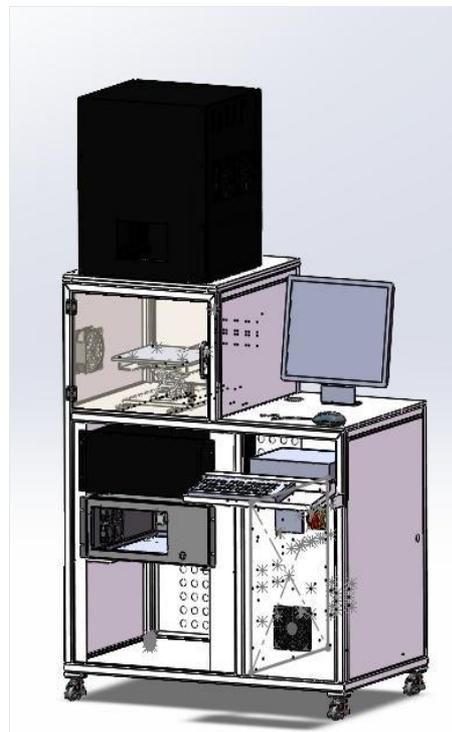
By simultaneously irradiating multiple components with a standard sunlight simulator, multi-channel independent control and data acquisition can be achieved, significantly improving the efficiency of research and development screening.

Fully Integrated Automation System

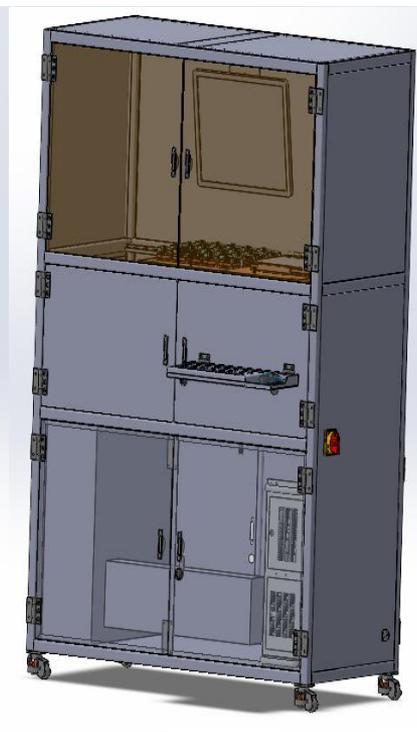
It integrates a highly integrated LED steady-state light source, a multi-channel test base, a temperature control module, and a data acquisition system, supporting long-term unattended automated operation.

Precise environmental simulation

It has independent temperature control and monitoring functions, and can simulate high temperature, high humidity and different light conditions to accurately evaluate the stability and degradation characteristics of the components.



MCTA-250-9T



MCT10-300-20T

Two typical product models

MCT10-300-20T

20-channel large-area steady-state testing system, compatible with components of various sizes.

Number of channels	20 channels
Fitted Size	Max 300×300mm
Light source type	LED 3A grade (100-300mm)
Special features	Switch platforms (multi-platform/single-platform mode)

MCTA-250-9T

A 9-channel high-precision aging test system that supports multi-point cyclic testing.

Number of channels	9 channels (8 points per channel)
Effective area	250×250mm
Electrical range	30V/1A, 18V/1A, 10V/0.5A
Special features	Independent temperature and humidity control

MCT10-300-20T Technical Specifications

A high-performance testing platform designed specifically for large-size components, integrating 20 independent test channels to meet high-throughput R&D needs.

Test Channel	20 channels (customizable channel count supported, independent control and data acquisition supported)
Light source system	LED Steady-State Solar Simulator (Class AAA)
Fitted Size	50x50mm to 300x300mm
Temperature control range	25 - 100°C (accuracy $\pm 2^{\circ}\text{C}$)
Electrical range	Voltage Max 18V / Current Max 1A
Measurement accuracy	0.1% (voltage/current/power)
Equipment size	1200 × 800 × 1800 mm



MCTA-250-9T Technical Specifications

System parameter

Test Channel	9 channels (each channel supports 8 points of rotation)
Effective area	250mm × 250mm
Light source type	LED steady-state light source (3A grade)

Electrical properties

Electrical range I	30V / 1A
Electrical Range II	18V / 1A
Electrical range III	10V / 500mA

Environmental control (capable of dual 85 testing)

Temperature control range	-10°C ~ 100°C (±2°C)
Humidity control	15% ~ 100% RH (±2%)
Cooling method	Internal water cooling + external air cooling
Nitrogen protection	Large chamber nitrogen protection + small test box nitrogen protection



MCTA-250-9T Core Functions

01 Multi-point relay cyclic test

With 9 independent channels, each channel supports 8-point relay cyclic detection, allowing a large number of samples to be covered in a single experiment, greatly improving data output efficiency.

02 Independent temperature control and rapid cooling

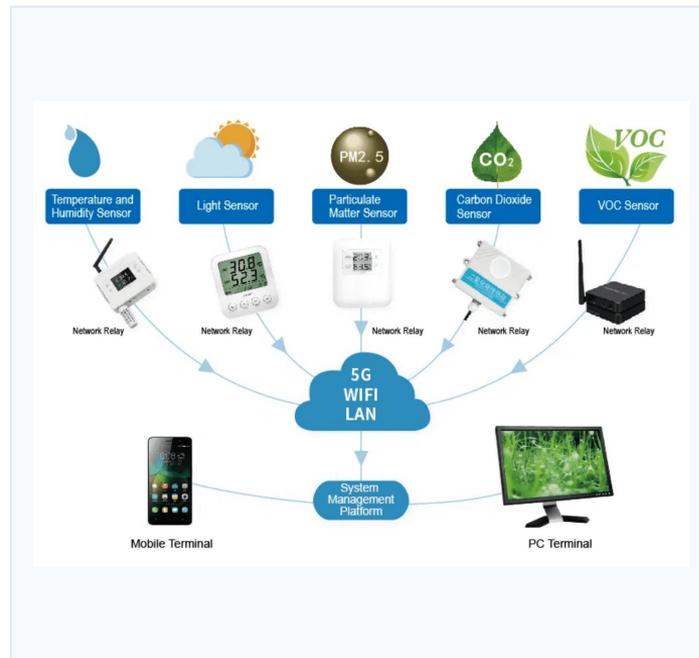
It integrates a 4-channel independent temperature control module (-10°C to 100°C) with rapid cooling function to ensure the testing accuracy of components under different temperature environments.

03 Environmental humidity control

An optional humidity control module can be installed to precisely adjust the humidity of the test area (20%-80% RH) to meet the needs of aging tests in complex environments.

04 Software automated monitoring

The accompanying software supports fully automatic data acquisition, real-time curve monitoring, and anomaly alarms, enabling 24/7 unattended operation.



Schematic diagram of intelligent monitoring and data management system

01

Multichannel IV testing

Supports forward and reverse scanning tests, 9-point fitting method, and dynamic IV scanning. Each channel is independently controllable, allowing for flexible setting of different scanning parameters and interval durations to meet complex experimental needs.

Forward
and reverse
scanning

9-point
fitting

Dynam
ic IV

03

Real-time monitoring and display

It displays and records IV curves, PV curves, and temperature change curves in real time. The interface is intuitive, supports simultaneous comparison of multi-channel data, and provides immediate alarms for abnormal conditions.

Temperat
ure curve

IV curve

Status
alarm

02

MPPT tracking algorithm

It incorporates multiple maximum power point tracking algorithms, including the perturbation observation method, the incremental conductance method, and the fixed voltage method, to effectively address the hysteresis effect of perovskite solar cells and ensure data accuracy.

Perturbation
observation
method

Incremental
conductivity
method

Fixed
voltage

04

Automated data management

It supports scheduled testing and automatic saving. Data files are automatically named and archived, and users can choose to save each channel independently or summarize them uniformly for convenient subsequent data processing and analysis.

Automati
c naming

Save
regularly

Data
export

Typical application scenarios

Suitable for long-term stability testing, process screening, and lifetime assessment of perovskite and tandem solar cells. Captures minute performance degradation trends through high-precision data acquisition.

Efficient solutions to accelerate perovskite research and development

01 High-throughput parallel testing

It supports simultaneous independent operation of multiple channels, and a single experiment can cover a large number of samples, significantly shortening the R&D verification cycle.

02 Fully automated and unattended

It operates 24/7 without interruption, and with remote monitoring and abnormal alarms, it significantly reduces labor costs and operational errors.

03 Intelligent Algorithm Integration

It incorporates multiple MPPT tracking algorithms to adapt to the testing needs of batteries with different characteristics, ensuring the authenticity and accuracy of the data.

04 Flexible customization services

The modular hardware and software architecture can be deeply customized according to the customer's specific experimental scenario to meet special testing needs.

3 Days

Quick installation and debugging

Once the conditions are met, the engineer will complete the equipment installation and commissioning within 3 working days.

12 Months

Free warranty period

The machine comes with a 12-month free warranty, and regular inspection and maintenance recommendations are provided.

24 Hours

Rapid after-sales response

We will respond within 24 hours of a fault occurring, prioritizing remote video guidance.

1 Day

Professional and technical training

Provide at least one day of on-site operation, software usage, and maintenance training.

Life Time

Lifetime repair service

We offer lifetime paid repair services outside the warranty period to ensure the long-term operation of the equipment.

72 Hours

On-site troubleshooting

If an emergency cannot be resolved remotely, we will arrive on-site within 72 hours to handle it.



Professional service team and standardized tools

Looking forward to creating the future with you

The most professional and efficient intelligent solution
in the field of perovskite detection.

Get in Touch

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