SHAPING THE FUTURE OF ENERGY

CATALOG

2024

...with pioneering solutions

WATTICAL

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ABOUT US

Wattical Energon Tech GmbH is a high-tech leader in battery testing and energy storage solutions, with a strong commitment to deliver safe, reliable, and innovative products. Based in Aachen (Germany), we specialize in developing power electronics equipment for new energy vehicles and energy storage industries.

At Wattical, we prioritize our customers by focusing on their evolving needs, continuously pushing the boundaries of innovation. Our comprehensive testing solutions are trusted by top battery manufacturers, research institutions, OEMs, and integrators, helping them to ensure performance and reliability in an ever-changing energy landscape. Through close collaboration with ecological partners and a strong customer-centric focus, we generate long-term value for our clients while driving forward the future of energy storage.

VISION

Our vision is to lead the future of sustainable energy by revolutionizing battery testing technology for a greener, more efficient world.

MISSION

Our mission is to empower innovation in energy storage by providing precise, adaptable, and sustainable battery testing solutions. We are committed to delivering cutting-edge technology that helps our clients optimize the performance, longevity, and safety of batteries, while contributing to a cleaner and more energy-efficient future.

PROFESSIONAL TEAM

We are proud to have a professional team of experts with decades of experience in the battery testing and energy storage industry. Our team's in-depth knowledge and hands-on expertise allow us to provide top tier consulting services, ensuring that our customers receive tailored solutions that meet their specific needs. From optimizing testing processes to integrating advanced technology, our experienced consultants are dedicated to driving innovation and delivering long-term value.

HEADQUARTER GERMANY

To provide fast and reliable support, Wattical has established a local service team based in Aachen, Germany. This allows us to offer prompt and efficient customer support, ensuring that any technical issues or service requests are addressed quickly. Our local presence in Germany enables us to maintain close relationships with our customers in Europe and offer personalized service, reducing downtime and keeping your testing operations running smoothly.

Sustainability at Wattical

Sustainability is at the core of everything we do. Our products are designed to deliver precise, reliable performance while minimizing environmental impact. By incorporating advanced energy recovery systems, our battery testers operate with high efficiency, reducing pollutant emissions and lowering overall energy consumption. This bidirectional energy conversion system recovers energy during testing, making our solutions eco-friendly and cost-effective, resulting in substantial savings for our customers.

Driven by innovation, we also offer energy routing technology combined with integrated energy storage systems to provide the most efficient solutions for large-scale testing needs. This ensures optimized energy use, further enhancing sustainability and supporting our customers‘ operational efficiency.

Our commitment to sustainability extends beyond our products. Our vision is to become a global partner for companies striving to cut greenhouse gas emissions. By collaborating with businesses worldwide that share this goal, we are dedicated to creating a more sustainable and energy-efficient future through innovative technologies.

Precision

At Wattical, precision is at the heart of everything we do. We are committed to delivering highly accurate, reliable testing solutions that meet the highest industry standards.

Customer Demand Response

Client satisfaction is our top priority. Therefore, we take a customer-centric approach, responding swiftly with tailored solutions that align our products and services with each client’s unique goals for maximum efficiency.

Fast Iteration Capability

We believe in agility and continuous improvement. Our fast iteration capability enables us to swiftly adapt and enhance our products in response to evolving industry demands and technological advancements.

Innovation

Innovation drives our business forward. We continuously explore new technologies and push the boundaries of future possibilities in battery testing and energy solutions.

ADVANCED FEATURES

Lossless Parallel Connection

Our battery testers feature an advanced lossless parallel connection technology, allowing multiple circuits to be connected in parallel without any Performance degrading. This capability ensures that the system can handle high power requirements while maintaining the same level of precision and efficiency across all connected circuits. The lossless principle eliminates restrictions on data acquisition, making the process highly efficient even for complex testing scenarios. This feature is especially beneficial for customers with different range applications, ensuring precise accuracy.

Optical Transmission

We are the only provider in the battery testing industry to incorporate optical transmission technology. This feature ensures ultra-fast, interference-free communication between testing components. Optical transmission uses light signals instead of electrical ones, which makes the system highly resistant to electromagnetic interference, improving both the speed and reliability of data transfer. This is particularly important in battery testing, where precise and stable data communication is critical for monitoring real-time performance. It also enhances safety by eliminating the risk of electrical faults in data transmission.

High Precision with 0.02% U/I Accuracy

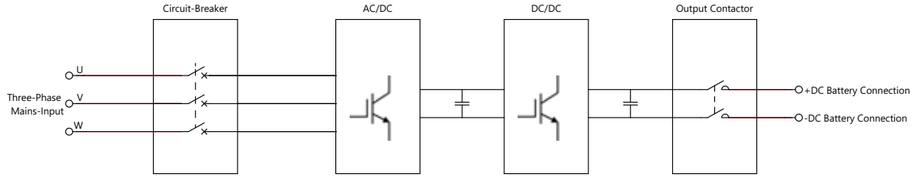
The battery testers from Wattical offer unparalleled precision, achieving an impressive 0.02% accuracy in both voltage (U) and current (I) measurements. This level of accuracy ensures highly reliable and stable test results, making it ideal for applications where even the smallest deviations can impact performance assessments. A stable accuracy enables consistent and trustworthy testing, essential for evaluating the life cycle, capacity, and other critical metrics in battery technologies, such as lithium-ion and next-generation batteries.

Professional Software

Besides the battery test solutions, we provide professional-grade software to support and enhance the testing process. Features like derating enable users to simulate and test the battery's behavior under varying conditions, ensuring safe operation and long-term reliability. The matrix feature enables complex testing across multiple conditions, such as temperature and state of charge, with parallel testing as a fundamental function. The software is designed with user-friendly interfaces and advanced data management tools, enabling easy configuration, monitoring, analysis, as well as data storage and archiving of test results in real time.

PRODUCTS

Bidirectional Power Conversion



CELLTESTER

- Laptops / Tablets
- Consumer Electronics
- Battery Materials Research
- Intelligent Recongnition
- Smart Water & Gas
- Coin Cell Experimental Line
- Cylindrical Cell Experimental Line

NAMING SCHEME

BCTer-<A/B/F/N/R>-<Voltage>-<Current>-<NumberOfChannels>

B Basic Version (Standard Series)
N Negative Voltage (Enhanced Series)
A Accuracy (High Precision Series)
F Fast Series
R Ripple Series

MODULETESTER

- Electric Motorcycles
- Electric Bicycles
- Industrial Robots
- Service Robots
- Professional Hospital Devices
- Smart Street Lights
- Bicycle-Sharing

NAMING SCHEME

BMTer-<A/B/F/N/R>-<Voltage>-<Current>-<NumberOfChannels>

B Basic Version (Standard Series)
N Negative Voltage
or Zero-Voltage Option (Enhanced Series)
A Accuracy (High Precision Series)

PACKTESTER

- Electric Vehicles
- Industrial Robots
- EV Parameter Assesment

NAMING SCHEME

HVPT-<A/B/N>-<Voltage>-<Current>-<NumberOfChannels>

B Basic Version (Standard Series)
N Negative Voltage
or Zero-Voltage-Option (Enhanced Series)
A Accuracy (High Precision Series)

CLUSTERTESTER

- Industrial & Commercial Storage
- Household Energy Storage
- Communication Energy Storage

NAMING SCHEME

HVCT-<A/B/N>-<Voltage>-<Current>-<NumberOfChannels>

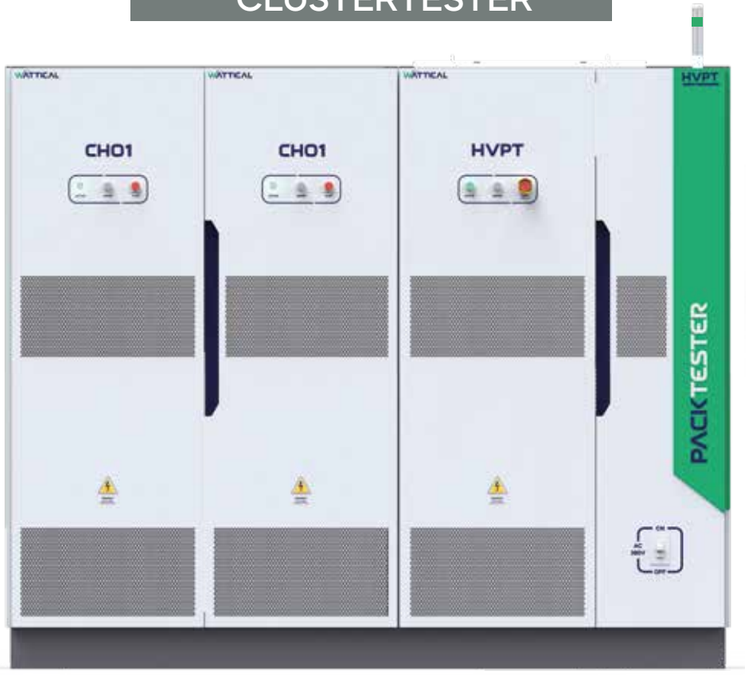
B Basic Version (Standard Series)
N Negative Voltage
or Zero-Voltage-Option(Enhanced Series)
A Accuracy (High Precision Series)

CELLTESTER

MODULETESTER

PACKTESTER

CLUSTERTESTER



WATTICAL

WATTICAL

The Wattical battery cell testers offer the ability to precisely analyse battery technologies such as lead-acid, Li-ion and their derivatives as well as next-generation battery systems. Using advanced microprocessor-controlled controllers, they adapt to evolving battery testing needs, supporting nearly any test standard. With an AC/DC converter on the mains side (AFE) and a DC/DC converter on the battery side, our cell tester ensures efficient, eco-friendly operation through regenerative hardware design.

Performance and Measurement Capabilities

- High measurement accuracy, with voltages from 0-5V to 20V and currents from 60A to 5000A+ per channel.
- Very high measurement rates, with an option for ultra-high rate recording.
- Circuits can be connected in parallel without loss, ensuring unrestricted data acquisition.
- Adaptive range switching allows for precise measurement without manual hardware adjustments.

Customization and Flexibility

- Modular design allows flexible configuration and customization to meet specific needs.

Typical applications include

- Cycle life test
- Working condition simulation test
- Battery capacity test
- Battery DCIR test
- Charge and discharge characteristics test
- Battery SOC test
- Pulse charge and discharge test
- Rate performance test
- Overcharge/overdischarge test

Please scan the QR Code for more information about the Wattical Celltester.

CELLTESTER

Testing and Integration Features

- Cells can be tested in temperature-controlled climatic cabinets, integrated into the battery testing system.
- Measurement data acquisition devices and data loggers can be integrated.
- Wattical systems allow cloud-based data management and archiving.
- Integration into a Manufacturing Execution System (MES) is available.
- Built-in high-performance computer enables offline, self-sufficient operation without a host computer.

BCTer-B-5

Parameters (5V Basic Series)

AC Parameters									
Mains Connection		Three-phase five-wire control			**Input Voltage**		380VAC ±10%		
Input Frequency		50Hz ±2Hz			**Power Factor**		>0.99		
Energy Feedback		Available			**Conversion Efficiency**		90% (peak value)		
Regenerative Efficiency		80% (peak value)			**Total Harmonic Distortion(THD)**		<5%		
DC Parameters									
Voltage	**Range**	1V ~ 5V (equipment terminal voltage, possible to increase to 6V)							
	Accuracy	±0.05% F.S.							
	Resolution	0.1mV							
Current	**Range**	±300A	±400A	±500A	±600A	±700A	±800A	±1000A	±1200A
	Accuracy	±0.05% F.S.							
	Resolution	0.1mA							
Channel Power		1.5kW	2kW	2.5kW	3kW	3.5kW	4kW	5kW	6kW
Number of Channels (Full Cabinet)		16	16	8	8	8	8	4	4
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet							
Current Response Time		≤5ms (10%~90% F.S.)							
Current Switching Time		≤10ms (-90%~90% F.S.)							
Minimum Pulse Width		20ms							
Testing Functions									
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.							
Data	**Recording Frequency**	100Hz (10ms)							
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.							
External Interface		Supports data logger, Climate chamber, etc.							
Communication Method		Ethernet							
General Parameters									
Protection Level		IP20							
Operating Temperature		0°C - 45°C							
Operating Humidity		<90% RH (non-condensing)							
Device Noise		≤70dB							
Cooling Method		Forced air cooling							

BCTer-(A)N-5

Parameters (5V Enhanced Series)

AC Parameters					
Mains Connection		Three-phase five-wire control	**Input Voltage**		380VAC ±10%
Input Frequency		50Hz ±2Hz	**Power Factor**		>0.99
Energy Feedback		Available	**Conversion Efficiency**		90% (peak value)
Regenerative Efficiency		70% (peak value)	**Total Harmonic Distortion(THD)**		<5%
DC Parameters					
Voltage	**Range**	-5V~ 5V (equipment terminal voltage, possible to increase to 6V)			
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mV			
Current	**Range**	±300A	±400A	±500A	±600A
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mA			
Channel Power		1.5kW	2kW	2.5kW	3kW
Number of Channels (Full Cabinet)		16	16	8	8
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet			
Current Response Time		≤5ms (10%~90% F.S.)			
Current Switching Time		≤10ms (-90%~90% F.S.)			
Minimum Pulse Width		20ms			
Testing Functions					
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.			
Data	**Recording Frequency**	100Hz (10ms)			
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.			
External Interface		Supports data logger, Climate chamber, etc.			
Communication Method		Ethernet			
General Parameters					
Protection Level		IP20			
Operating Temperature		0°C - 45°C			
Operating Humidity		<90% RH (non-condensing)			
Device Noise		≤70dB			
Cooling Method		Forced air cooling			

BCTer-(A)FN-5					
Parameters (5V Fast Series)					
AC Parameters					
Mains Connection		Three-phase five-wire control	**Input Voltage**	380VAC ±10%	
Input Frequency		50Hz ±2Hz	**Power Factor**	>0.99	
Energy Feedback		Available	**Conversion Efficiency**	90% (peak value)	
Regenerative Efficiency		70% (peak value)	**Total Harmonic Distortion(THD)**	<5%	
DC Parameters					
Voltage	**Range**	0V ~ 5V (supports 0V or negative voltage, possible to increase to 6V)			
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mV			
Current	**Range**	±60A	±120A	±300A	±600A
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mA			
Channel Power		300W	600W	1.5kW	3kW
Number of Channels (Full Cabinet)		32	32	16	8
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet			
Current Response Time		≤600μs (10%~90% F.S.)		≤1ms (10%~90% F.S.)	
Current Switching Time		≤1ms (~90%~0% F.S.)		≤2ms (~90%~0% F.S.)	
Minimum Pulse Width		10ms			
Testing Functions					
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.			
Data	**Recording Frequency**	1000Hz (1ms)			
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.			
External Interface		Supports data logger, Climate chamber, etc.			
Communication Method		Ethernet			
General Parameters					
Protection Level		IP20			
Operating Temperature		0°C - 45°C			
Operating Humidity		<90% RH (non-condensing)			
Device Noise		≤70dB			
Cooling Method		Forced air cooling			

BCTer-BR-5					
Parameters (5V Ripple Series)					
AC Parameters					
Mains Connection		Three-phase five-wire control	**Input Voltage**	380VAC ±10%	
Input Frequency		50Hz ±2Hz	**Power Factor**	>0.99	
Energy Feedback		Available	**Conversion Efficiency**	90% (peak value)	
Regenerative Efficiency		70% (peak value)	**Total Harmonic Distortion(THD)**	<5%	
DC Parameters					
Voltage	**Range**	1V ~ 5V (equipment terminal voltage, possible to increase to 6V)			
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mV			
Current	**Range**	±300A	±400A	±500A	±600A
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mA			
Ripple Current		100A p.p.			
Ripple Frequency		10-1kHz			
Number of Channels (Full Cabinet)		8			
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet			
Current Response Time		≤5ms (10%~90% F.S.)			
Current Switching Time		≤10ms (-90%~90% F.S.)			
Minimum Pulse Width		20ms			
Testing Functions					
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.			
Data	**Recording Frequency**	100Hz (10ms)			
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.			
External Interface		Supports data logger, Climate chamber, etc.			
Communication Method		Ethernet			
General Parameters					
Protection Level		IP20			
Operating Temperature		0°C - 45°C			
Operating Humidity		<90% RH (non-condensing)			
Device Noise		≤70dB			
Cooling Method		Forced air cooling			

BCTer-(A)N-(10)20					
Parameters (10V/ 20V Basic Series)					
AC Parameters					
Mains Connection		Three-phase five-wire control	**Input Voltage**	380VAC ±10%	
Input Frequency		50Hz ±2Hz	**Power Factor**	>0.99	
Energy Feedback		Available	**Conversion Efficiency**	90% (peak value)	
Regenerative Efficiency		80% (peak value)	**Total Harmonic Distortion(THD)**	<5%	
DC Parameters					
Voltage	**Range**	1.5V~ 10V (equipment terminal voltage)		1.5V~ 20V (equipment terminal voltage)	
	Accuracy	±0.05% F.S.			
	Resolution	0.1mV			
Current	**Range**	±300A	±600A	±300A	±600A
	Accuracy	±0.05% F.S.			
	Resolution	0.1mA			
Channel Power		3KW	6KW	6KW	12KW
Number of Channels (Full Cabinet)		16		8	
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet			
Current Response Time		≤5ms (10%~90% F.S.)			
Current Switching Time		≤10ms (-90%~90% F.S.)			
Minimum Pulse Width		20ms			
Testing Functions					
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.			
Data	**Recording Frequency**	100Hz (10ms)			
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.			
External Interface		Supports data logger, Climate chamber, etc.			
Communication Method		Ethernet			
General Parameters					
Protection Level		IP20			
Operating Temperature		0°C - 45°C			
Operating Humidity		<90% RH (non-condensing)			
Device Noise		≤70dB			
Cooling Method		Forced air cooling			

BCTer-(A)N-10				
Parameters (10V Enhanced Series)				
AC Parameters				
Mains Connection		Three-phase five-wire control	**Input Voltage**	380VAC ±10%
Input Frequency		50Hz ±2Hz	**Power Factor**	>0.99
Energy Feedback		Available	**Conversion Efficiency**	90% (peak value)
Regenerative Efficiency		70% (peak value)	**Total Harmonic Distortion(THD)**	<5%
DC Parameters				
Voltage	**Range**	-10V~ 10V (equipment terminal voltage)		
	Accuracy	±0.05% F.S.		
	Resolution	0.1mV		
Current	**Range**	±300A	±600A	
	Accuracy	±0.05% F.S.		
	Resolution	0.1mA		
Channel Power		3kW	6kW	
Number of Channels (Full Cabinet)		16	8	
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet		
Current Response Time		≤5ms (10%~90% F.S.)		
Current Switching Time		≤10ms (-90%~90% F.S.)		
Minimum Pulse Width		20ms		
Testing Functions				
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.		
Data	**Recording Frequency**	100Hz (10ms)		
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.		
External Interface		Supports data logger, Climate chamber, etc.		
Communication Method		Ethernet		
General Parameters				
Protection Level		IP20		
Operating Temperature		0°C - 45°C		
Operating Humidity		<90% RH (non-condensing)		
Device Noise		≤70dB		
Cooling Method		Forced air cooling		

WATTICAL

The Wattical battery module testers enable precise analysis of various battery technologies, including lead-acid, Li-ion, their derivatives, and next-generation battery systems. Our Module-Testers are equipped with advanced microprocessor-controlled controllers, which offer an exceptional adaptability to meet the demands of future battery technology and accommodate nearly any test standard. The devices feature an AC/DC converter on the mains side and a DC/DC converter on the battery side, enabling eco-friendly, efficient operation through bidirectional power conversion.

Performance and Measurement Capabilities

- High measurement accuracy, with voltages from 0-60V to 300V and 100A to around 2400A and more per channel.
- Very high measurement rates for recording measured values.
- Circuits can be connected in parallel without loss, ensuring unrestricted data acquisition.
- Adaptive range switching allows for precise measurement without manual hardware adjustments.

Customization and Flexibility

- Modular design allows flexible configuration and customization to meet specific needs.

Typical applications include

- Cycle life test
- Working condition simulation test
- Battery capacity test
- Battery DCIR test
- Charge and discharge characteristics test
- Battery SOC test
- Pulse charge and discharge test
- Rate performance test
- HPPC mixed pulse test

Please scan the QR Code for more information about the Wattical Moduletester.

MODULETESTER

Testing and Integration Features

- Battery modules can be tested in temperature-controlled climatic cabinets for precise testing, with seamless integration into the peripheral control of the battery testing system.
- Measurement data acquisition devices and data loggers can be integrated.
- Wattical systems allow cloud-based data management and archiving.
- Integration into a Manufacturing Execution System (MES) is available.
- Built-in high-performance computer enables offline, self-sufficient operation without a host computer.

BMTer-(A)B/N-60/100							
Parameters (60V/ 100V Module Series)							
AC Parameters							
Mains Connection		Three-phase five-wire control		**Input Voltage**		380VAC ±10%	
Input Frequency		50Hz ±2Hz		**Power Factor**		>0.99	
Energy Feedback		Available		**Conversion Efficiency**		90% (peak value)	
Regenerative Efficiency		92% (peak value)		**Total Harmonic Distortion(THD)**		<5%	
DC Parameters							
Voltage	**Range**	60V (Discharge minimum voltage: 10V, supports 0V or negative voltage)			100V (Discharge minimum voltage: 10V, supports 0V or negative voltage)		
	Accuracy	±0.05% F.S. / ±0.02% F.S.					
	Resolution	0.1mV					
Current	**Range**	±100A	±200A	±300A	±100A	±200A	±300A
	Accuracy	±0.05% F.S. / ±0.02% F.S.					
	Resolution	0.1mA					
Channel Power		6kW	12kW	18kW	10kW	20kW	30kW
Number of Channels (Full Cabinet)		8	4	4	8	4	4
Channel Parallel Connection		Supports arbitrary parallel connection					
Current Response Time		≤3ms (10%~90% F.S.)					
Current Switching Time		≤5ms (-90%~90% F.S.)					
Minimum Pulse Width		20ms					
Testing Functions							
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.					
Data	**Recording Frequency**	100Hz (10ms interval)					
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.					
External Interface		Supports data collection, temperature sensors, and other external triggers via LAN connection					
Communication Method		Ethernet					
General Parameters							
Protection Level		IP20					
Operating Temperature		0°C - 45°C					
Operating Humidity		<90% RH (non-condensing)					
Device Noise		≤75dB					
Cooling Method		Forced air cooling					

BMTer-(A)B/N-150/200/250/300				
Parameters (150V/ 200V/ 250V/ 300V Module Series)				
AC Parameters				
Mains Connection	Three-phase five-wire control		**Input Voltage**	380VAC ±10%
Input Frequency	50Hz ±2Hz		**Power Factor**	>0.99
Energy Feedback	Available		**Conversion Efficiency**	92% (peak value)
Regenerative Efficiency	92% (peak value)		**Total Harmonic Distortion(THD)**	<5%
DC Parameters				
Voltage	**Range**	150V / 200V / 250V / 300V (Discharge Min: 15V, supports 0V or negative voltage)		
	Accuracy	±0.05% F.S. / ±0.02% F.S		
	Resolution	0.1mV		
Current	**Range**	±300A	±600A	±1200A
	Accuracy	±0.05% F.S. / ±0.02% F.S.		
	Resolution	0.1mA		
Channel Power		120kW / 240kW / Customized Power		
Number of Channels (Full Cabinet)		2 / 4 / 8	2 / 4	1 / 2
Channel Parallel Connection		Supports arbitrary parallel connection		
Current Response Time		≤3ms (10%~90% F.S.)		
Current Switching Time		≤5ms (-90%~90% F.S.)		
Minimum Pulse Width		20ms		
Testing Functions				
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant resistance discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.		
Data	**Recording Frequency**	100Hz (10ms)		
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.		
External Interface		Supports data collection, temperature sensors, external device connection		
Communication Method		Ethernet		
General Parameters				
Protection Level		IP20		
Operating Temperature		0°C - 45°C		
Operating Humidity		<90% RH (non-condensing)		
Device Noise		≤75dB		
Cooling Method		Forced air cooling		

WATTICAL

The Wattical battery pack testers provide precise analysis of various battery technologies, including lead-acid, Li-ion, their derivatives, and next-generation systems. Equipped with advanced microprocessor-controlled controllers, they adapt seamlessly to evolving testing needs, supporting nearly any standard. Featuring an AC/DC converter on the mains side (AFE) and a DC/DC converter on the battery side, our testers ensure efficient, eco-friendly operation through bidirectional energy conversion.

Performance and Measurement Capabilities

- High measurement accuracy, with voltages from 0-600V to 1000V and currents from 300A to 3600A+ per channel.
- Very high measurement rates, with an option for ultra-high rate recording.
- Circuits can be connected in parallel without loss, ensuring unrestricted data acquisition.
- Adaptive range switching allows for precise measurement without manual hardware adjustments.

Customization and Flexibility

- Modular design allows flexible configuration and customization to meet specific needs.

Typical applications include

- Cycle life test
- Working condition simulation test
- Battery capacity test
- Battery DCIR test
- Charge and discharge characteristics test
- Battery SOC test
- Pulse charge and discharge test
- Rate performance test
- Overcharge/overdischarge test

Please scan the QR Code for more information about the Wattical Packtester.

PACKTESTER

Testing and Integration Features

- Battery Packs can be tested in temperature-controlled climatic cabinets, integrated into the battery testing system.
- Measurement data acquisition devices and data loggers can be integrated.
- Wattical systems allow cloud-based data management and archiving.
- Integration into a Manufacturing Execution System (MES) is available.
- Built-in high-performance computer enables offline, self-sufficient operation without a host computer.

HVPT-(A)B/N-600				
Parameters (600V Pack Series)				
AC Parameters				
Mains Connection		Three-phase five-wire control	**Input Voltage**	380VAC ±10%
Input Frequency		50Hz ±2Hz	**Power Factor**	>0.99
Energy Feedback		Available	**Conversion Efficiency**	92% (peak value)
Regenerative Efficiency		92% (peak value)	**Total Harmonic Distortion(THD)**	<5%
DC Parameters				
Voltage	**Range**	600V (Discharge minimum voltage: 40V, supports 0V or negative voltage)		
	Accuracy	±0.05% F.S. / ±0.02% F.S.		
	Resolution	0.1mV		
Current	**Range**	±300A	±600A	
	Accuracy	±0.05% F.S. / ±0.02% F.S.		
	Resolution	0.1mA		
Channel Power		300kW / 400kW / 500kW		
Number of Channels (Full Cabinet)		4	2	
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet, and the serial and parallel models support one-key serial/parallel connection		
Current Response Time		≤3ms (10%~90% F.S.)		
Current Switching Time		≤5ms (-90%~90% F.S.)		
Minimum Pulse Width		20ms		
Testing Functions				
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant voltage discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.		
Data	**Recording Frequency**	100Hz (10ms)		
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.		
External Interface		Supports data logger, Climate chamber, etc.		
Communication Method		Ethernet		
General Parameters				
Protection Level		IP20		
Operating Temperature		0°C - 45°C		
Operating Humidity		<90% RH (non-condensing)		
Device Noise		≤75dB		
Cooling Method		Forced air cooling		

HVPT-(A)B/N-1000					
Parameters (1000V Pack Series)					
AC Parameters					
Mains Connection		Three-phase five-wire control		**Input Voltage**	380VAC ±10%
Input Frequency		50Hz ±2Hz		**Power Factor**	>0.99
Energy Feedback		Available		**Conversion Efficiency**	92% (peak value)
Regenerative Efficiency		92% (peak value)		**Total Harmonic Distortion(THD)**	<5%
DC Parameters					
Voltage	**Range**	1000V (Discharge minimum voltage: 40V, supports 0V or negative voltage)			
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mV			
Current	**Range**	±400A	±600A	±800A	±1000A
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mA			
Channel Power		300kW / 400kW / 500kW / 600kW / 700kW / 800kW / 1000kW			
Number of Channels (Full Cabinet)		2			
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet			
Current Response Time		≤3ms (10%~90% F.S.)			
Current Switching Time		≤5ms (-90%~90% F.S.)			
Minimum Pulse Width		20ms			
Testing Functions					
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant voltage discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.			
Data	**Recording Frequency**	100Hz (10ms)			
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.			
External Interface		Supports data logger, climate chamber, etc.			
Communication Method		Ethernet			
General Parameters					
Protection Level		IP20			
Operating Temperature		0°C - 45°C			
Operating Humidity		<90% RH (non-condensing)			
Device Noise		≤75dB			
Cooling Method		Forced air cooling			

WATTICAL

The Wattical Clustertesters deliver precise analysis across a range of battery technologies, including lead-acid, Li-ion, their derivatives, and next-generation systems. Equipped with advanced microprocessor-controlled controllers, they adapt effortlessly to changing testing requirements and support nearly any industry standard.
With an AC/DC converter on the mains side (AFE) and a DC/DC converter on the battery side, our Clustertesters operate efficiently and sustainably, utilizing bidirectional energy conversion for eco-friendly performance.

Performance and Measurement Capabilities

- High measurement accuracy, with voltages from 0-1800V to 2500V and currents from 300A to 3600A+ per channel.
- Very high measurement rates, with an option for ultra-high rate recording.
- Circuits can be connected in parallel without loss, ensuring unrestricted data acquisition.
- Adaptive range switching allows for precise measurement without manual hardware adjustments.

Customization and Flexibility

- Modular design allows flexible configuration and customization to meet specific needs.

Typical applications include

- Cycle life test
- Working condition simulation test
- Battery capacity test
- Battery DCIR test
- Charge and discharge characteristics test
- Battery SOC test
- Pulse charge and discharge test
- Rate performance test
- Overcharge/overdischarge test

Please scan the QR Code for more information about the Wattical Clustertester

CLUSTERTESTER

Testing and Integration Features

- Battery Packs can be tested in temperature-controlled climatic cabinets, integrated into the battery testing system.
- Measurement data acquisition devices and data loggers can be integrated.
- Wattical systems allow cloud-based data management and archiving.
- Integration into a Manufacturing Execution System (MES) is available.
- Built-in high-performance computer enables offline, self-sufficient operation without a host computer.

HVCT-(A)B/N-1800/2000/2500					
Parameters (1800V/ 2000V/ 2500V Cluster Series)					
AC Parameters					
Mains Connection		Three-phase five-wire control		**Input Voltage**	380VAC ±10%
Input Frequency		50Hz ±2Hz		**Power Factor**	>0.99
Energy Feedback		Available		**Conversion Efficiency**	92% (peak value)
Regenerative Efficiency		92% (peak value)		**Total Harmonic Distortion(THD)**	<5%
DC Parameters					
Voltage	**Range**	1800V / 2000V / 2500V (Discharge minimum voltage: 100V)			
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mV			
Current	**Range**	±300A	±600A	±600A	±1000A
	Accuracy	±0.05% F.S. / ±0.02% F.S.			
	Resolution	0.1mA			
Channel Power		450kW / 500kW / 600kW / 700kW / 800 kW / 1000kW / 2000kW			
Number of Channels (Full Cabinet)		1 / 2			
Channel Parallel Connection		Support lossless parallel connection of any channel in the cabinet			
Current Response Time		≤3ms (10%~90% F.S.)			
Current Switching Time		≤5ms (-90%~90% F.S.)			
Minimum Pulse Width		20ms			
Testing Functions					
Charge and Discharge Mode		Constant current charging, constant voltage charging, constant current and constant voltage charging, constant power charging, constant current discharge, constant voltage discharge, constant power discharge, constant resistance discharge, constant current pulse, constant current ramp, pulse working condition, etc.			
Data	**Recording Frequency**	100Hz (10ms)			
	Recording Conditions	Time (Δt), voltage (ΔV), current (ΔI), etc.			
External Interface		Supports data logger, climate chamber, etc.			
Communication Method		Ethernet			
General Parameters					
Protection Level		IP20			
Operating Temperature		0°C - 45°C			
Operating Humidity		<90% RH (non-condensing)			
Device Noise		≤75dB			
Cooling Method		Forced air cooling			

NOTES

With our expertise, we help battery manufacturers and energy companies become more sustainable and efficient.

OPEN QUESTIONS

NOTES

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