



MODEL 1210

KEY FEATURES

- Power HIL testing for motors, motor drivers, transmissions, and electric drive systems
- Power up to 600kW
- Rotational speed up to 25,000rpm
- Various motor mounting options
- Integrated system safety features
- Compatible with various Simulink-based real-time vehicle models. Enables dynamic performance validation at full-vehicle level using international standards like NEDC, WLTP
- Supports motor vibration characterization
- Allows for locked rotor (stall) testing with manual or automatic settings
- Supports DUT communication via CAN, CAN FD, EtherCAT
- Compatible with high/low-temp climate chambers and water cooling systems
- Includes flow control module for water cooling system
- Compliant with:
 - GB/T 18488.1-2015
 - GB/T 18488.2-2015
 - GB/T 29307-2022
 - Industry-developed test standards

APPLICATIONS

- E-drive system calibration and verification
- Motor performance testing
- System reliability and durability testing
- Dynamic vehicle conditions simulation testing
- System integration testing



E-PROPULSION TEST SYSTEM MODEL 1210

Chroma introduces the Chroma 1210 E-Propulsion Test System, designed for both passenger and commercial electric vehicle (EV) applications. This system provides comprehensive simulation and testing for EV powertrains, including e-motors, motor drivers, transmissions, and e-drive systems.

The Chroma 1210 is primarily used for performance calibration and verification of automotive powertrains. It offers the capability to integrate whole-vehicle dynamic models for simulating and validating mechanical components. The system supports both manual and programmed operation, with synchronized recording of critical physical parameters such as voltage, current, power, speed, torque, and temperature. During testing, generated power is fed back to the grid via Chroma's regenerative bidirectional DC power supplies (17040 and 62000D series). The 1210 also features battery simulation, allowing real-time emulation of battery response characteristics during vehicle operation for highly reliable verification.

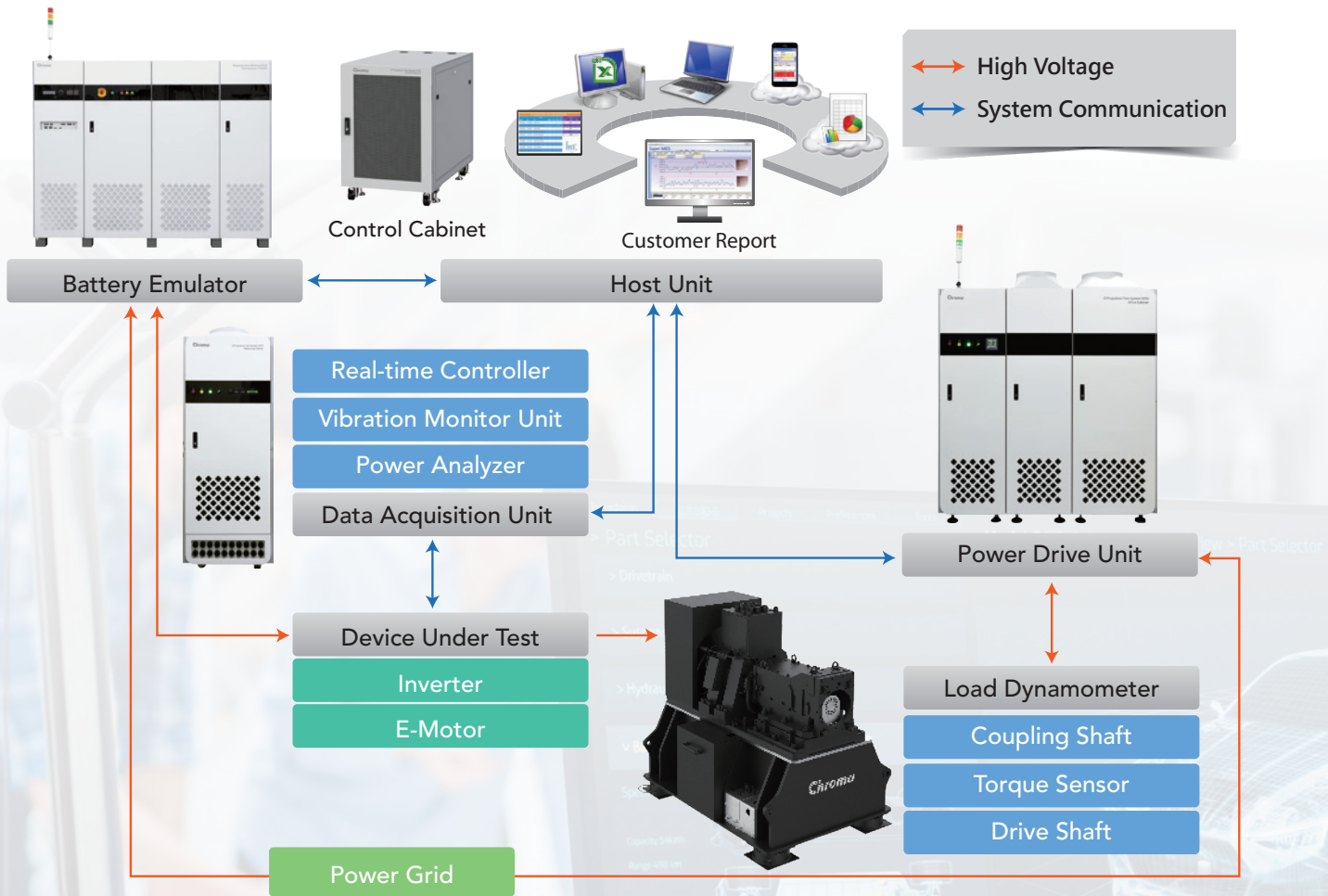
The E-Propulsion Test System has 4-quadrant operation capability, maintaining constant torque loading below rated speed (including zero speed and reverse), and constant power loading above rated speed. The test bench employs an integrated mechanical design, using modal analysis to simulate stress and resonance. It supports full-speed range testing and features a modular clamping system that accommodates a variety of motors under test. Comprehensive safety

mechanisms include overcurrent, overvoltage, undervoltage, and short-circuit protections, as well as power phase-loss detection, temperature monitoring, and overload response warnings. The complementary E-Propulsion Test software features DBC file loading, manual control, and data monitoring. The testing interface supports real-time waveform display, showing 2D graphs of speed, voltage, current, and other values against time, with configurable data sampling rates.

The 1210 system can run preset operating conditions. By importing CSV files, users can define test voltage values, current protection values, motor (load side) speed commands, motor (DUT) torque commands, and other control parameters corresponding to time conditions. Test reports include customizable charts, generating information such as product name, test date, and test parameters. For user-selected test data, the system can produce time-based parameter curves and efficiency maps for motors and motor drivers.

Built on an open software architecture, the Chroma 1210 seamlessly integrates with existing lab equipment and safety monitoring systems. Its built-in vibration monitoring ensures comprehensive oversight of both the test bench and device under test, making it an ideal solution for modern testing facilities seeking to streamline their operations through unified laboratory integration and management.

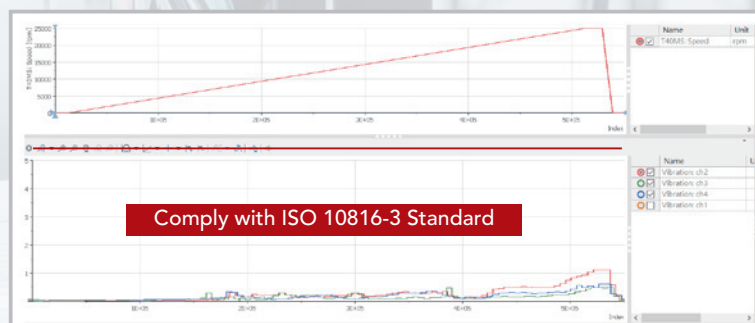
SYSTEM COMPOSITION



- **Load Dynamometer**
Measures torque, speed, or power. Consists of an AC motor, torque sensor, test bench, coupling, protective cover, and E-motor mounting fixture.
- **Power Drive Unit**
Controls the high-performance power drive unit of the AC motor on the test bench. Equipped with energy recovery capabilities.
- **Data Acquisition Unit**
Records data of various physical parameters and provides DIO / AIO / CAN / CAN FD / EtherCAT user interfaces.
- **Host Unit**
Executes the E-Propulsion Test control software, with functions including system control, data monitoring, and safety alerts.
- **Battery Emulator**
Simulates the dynamic charge and discharge behavior of automotive batteries, with energy recovery capabilities.

VIBRATION MONITOR UNIT

The vibration monitor unit measures vibrations from the dynamometer's motor, bearing housing, and the device under test (DUT). It monitors and records vibrations during testing, issuing alarms or halting the test if vibrations exceed safe limits. This ensures the safety and stability of the testing process while verifying compliance with specific vibration standards and regulations.

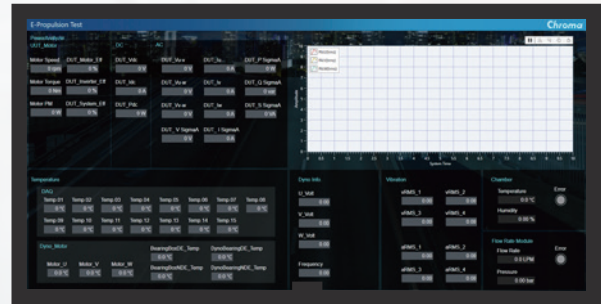


E-PROPULSION TEST SOFTWARE

Chroma's E-Propulsion Test software features a real-time control system that can manage DUT motor drivers and supports various communication protocols including CAN, CAN FD, and EtherCAT. The software accommodates a wide range of testing applications from powertrain performance testing to durability trials. Users can create automated tests through scripting and set up customized test scenarios to meet diverse validation requirements. The software comes equipped with comprehensive tools for system warnings, protection mechanisms, data processing and storage, waveform display, and report generation. Its graphical interface for data monitoring can be customized to cater to specific needs. For simulation of dynamic, real-world driving conditions, the software supports integration of Simulink-based real-time vehicle models. This allows for validation using international testing standards such as NEDC and WLTP for automotive power systems. Additionally, the software can simulate EV batteries, using actual mechanical energy consumption and recovery to validate battery management systems and calculate overall vehicle range.



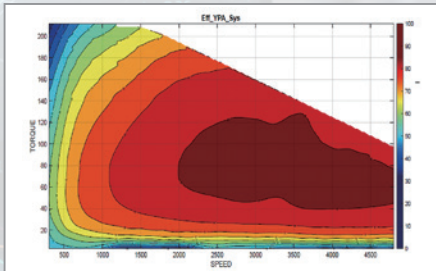
System Control Interface



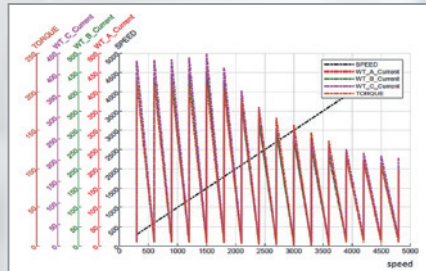
Data Monitor Interface

The E-Propulsion Test software can measure various motors and motor drivers with fully synchronized data acquisition. This comprehensive approach enables detailed analysis of different electric drive systems (single motor, motor-generator combinations, etc.) while accounting for additional loads (heating, air conditioning, 24V and 12V systems). In typical EV testing, motor drivers operate at different switching frequencies depending on driving conditions (urban traffic vs. long-distance mountain roads) to optimize efficiency. In real-world conditions, numerous factors determine energy consumption, including environmental conditions (temperature, weather), road conditions (uphill, downhill, urban streets, mountain roads, mixed terrain), road quality, and different driving habits. Chroma's E-Propulsion Test software can measure and analyze the impact of all these parameters simultaneously during testing, providing a comprehensive understanding of vehicle performance under various real-world conditions.

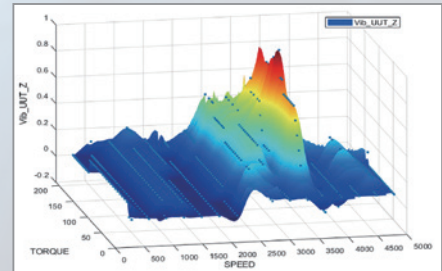
Test Report Output



System Efficiency Graph



FTP-75 Test Result



3D Report Output

SYSTEM FEATURES

System security protection - extending equipment life

- Comprehensive protection mechanisms including overcurrent, overvoltage, undervoltage, short circuit, power phase loss detection, and system temperature monitoring, with overload warning responses.
- Dual loop mode protection system for enhanced operating safety.
- Voltage and current measurement for DUT motors and motor drivers, with configurable safety threshold values.
- Equipped with a Vibration Monitor Unit for real-time monitoring of both the test system and DUT. In case of system abnormalities, immediate feedback is sent to the control terminal, triggering alarms or system shutdown to protect the DUT and testing equipment.

Simultaneous data measurement - improving experiment reliability

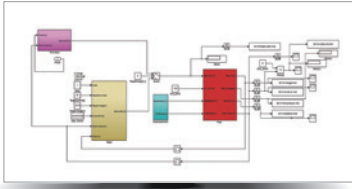
- Real-time monitoring interface displays instantaneous values including voltage, current, rotation speed, torque, input power, output power, efficiency, and temperature.
- Synchronized data collection with adjustable sampling rates to meet different testing requirements.
- Optional synchronized collection of CAN/CAN FD data and other physical measurements.

Test part vibration analysis - reducing motor abnormalities

- Real-Time Detection: Reliable automated fault diagnostics.
- Quality Assurance Testing: Continuous monitoring of DUTs, reducing testing time for defective products.

Real-Time System Hardware in the Loop

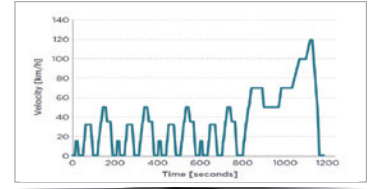
Load / Pedal Command Dyno Setpoint



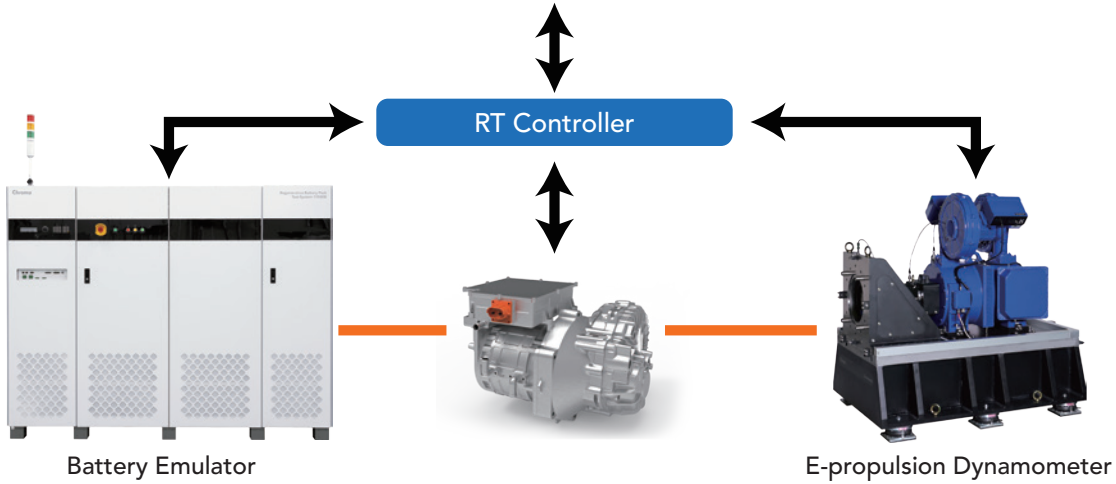
Vehicle Model



Software UI



Consumption Pattern



SPECIFICATIONS

Model	1210
System	
Max. Power Output	600kW
Max. Rotation Output	25,000rpm
Communication Interface	CAN, CAN FD, EtherCAT
Interface	A121000 E-Propulsion Test Software
Operating System	Windows 10 or higher
Ambient Conditions	
AC Input	3-phase 400VAC, 50/60Hz
Temperature Range	5°C to 40°C
Humidity Range	10 to 80%, non-condensing

* All specifications are subject to change without notice.

ORDERING INFORMATION

- 1210: E-propulsion Test System
- 17020/17040/17040E: Battery Pack Simulator
- 62000D: Battery Pack Simulator
- A121000: E-Propulsion Test Software
- HIOKI PW Series: Power Analyzer (option)
- YOKOGAWA WT Series: Power Analyzer (option)

Get more product & global distributor information in Chroma ATE APP



iOS





Android

Search Keyword

1210

HEADQUARTERS
CHROMA ATE INC.
88 Wenmao Rd.,
Guishan Dist.,
Taoyuan City
333001, Taiwan
T +886-3-327-9999
F +886-3-327-8898
www.chromaate.com
info@chromaate.com

U.S.A.
CHROMA SYSTEMS
SOLUTIONS, INC.
19772 Pauling,
Foothill Ranch,
CA 92610, USA
T +1-949-600-6400
F +1-949-600-6401
www.chromausa.com
sales@chromausa.com

EUROPE
CHROMA ATE EUROPE B.V.
Morsestraat 32, 6716 AH
Ede, The Netherlands
T +31-318-648282
F +31-318-648288
www.chroma.eu.com
salesnl@chroma.eu.com

CHROMA GERMANY GMBH
Südtiroler Str. 9, 86165,
Augsburg, Germany
T +49-821-790967-0
F +49-821-790967-600
www.chroma.eu.com
salesde@chroma.eu.com

JAPAN
CHROMA JAPAN
CORP.
888 Nippa-cho,
Kouhoku-ku,
Yokohama-shi,
Kanagawa,
223-0057 Japan
T +81-45-542-1118
F +81-45-542-1080
www.chroma.co.jp
info@chroma.co.jp

KOREA
CHROMA ATE
KOREA BRANCH
312, Gold Tower,
14-2, Pangyoeyeok-ro
192, Bundang-gu,
Seongnam-si,
Gyeonggi-do,
13524, Korea
T +82-31-781-1025
F +82-31-8017-6614
www.chromaate.co.kr
info@chromaate.com

CHINA
CHROMA ELECTRONICS
(SHENZHEN) CO., LTD.
8F, No.4, Nanyou Tian
An Industrial Estate,
Shenzhen, China
T +86-755-2664-4598
www.chroma.com.cn
info@chromaate.com

SOUTHEAST ASIA
QUANTEL PTE LTD.
(A company of Chroma Group)
25 Kallang Avenue #05-02
Singapore 339416
T +65-6745-3200
F +65-6745-9764
www.quantel-global.com
sales@quantel-global.com