



X-HVT

High Voltage Emulation



EMISSIONS



ELECTRIFICATION



CAV



DATA

The X-HVT charge-discharge units provide excellent accuracy at high-system dynamics. A single unit covers voltages up to 1,500 V, currents up to 1,500 A, and outputs up to 1,000 kW. Parallel alignment enables higher currents and power.

Fully programmable control circuits (CC, CV, CP) allow optimal adaption to the inspection needs, including map control. The system's advanced technology enables optimized energy recovery. For multi-channel configurations, the energy can be distributed in an intermediate circuit, thus reducing power input required. Especially with End-of-Line (EOL) applications and test fields, this property displays as particularly advantageous. An integrated sequencer (program memory) allows the generation of highly dynamic loading cycles and user-specific tests. The optional integrated impedance measurement (CCMod) is an indispensable tool for the continuous investigation of electrochemical phenomena and efficient diagnostic strategies.

FEATURES

- Advanced technology with extremely low noise design and integrated impedance measurement
- Outstanding security features for fulfillment of performance level "d"
- Programmable control loop architecture to accommodate different test tasks
- Data acquisition with highest accuracy and reproducibility
- Optimal battery and/or e-motor emulation

GENERAL FACTS	
POWER RATING	60kW, 160kW, 250kW, 300kW, 600kW, 900kW 1000kW further types on request
OVERALL EFFICIENCY AT POWER RATING	≥ 95 %
NOISE	≤ 70 dB (A) at 1 m (160 kW, 600 A)

EIS SPECIFICATION	
FREQUENCY RANGE	0.1 mHz to 10 kHz (optional up to 50 kHz)
IMPEDANCE RANGE	5 μΩ up to 100 Ω
IMPEDANCE ACCURACY	± 1 % ± 100 μΩ
PHASE ANGLE ACCURACY	± 1 °
MAX. MODULATION CURRENT	± 10 A _{AC}

ELECTRIC SPECIFICATION	
OPERATING MODES	CC, CV, CP, CC _{MOD}
VOLTAGE RANGE	800V, 1000V, 1200V, 1500V further types on request
CURRENT RANGE	± 600 A, 800A, ± 1,000 A, ± 1,200 A, 1400A, 2000A further types on request
MEASUREMENT ACCURACY	± 0.03 % MV, ± 0.015 % FS
RESOLUTION	16 bit
SAMPLING RATE	10 μs (100 kHz)
STORAGE RATE	3.0 ms

DYNAMIC SPECIFICATION	
RIPPLE	< 0.1 % eff. FS
RISK ASSESSMENT	< 3 ms

EMULATION	
CYCLE TIME	3 ms
STANDARD MODELS	VOCV + R1 + R2 C1 VOCV + R1 + R2 C1 + R3 C2 VOCV + R1 + R2 C1 + R3 C2 R4
SETPOINT	Voltage SOC
PARAMETER	Rated capacity Open circuit voltage Technology (SOC curve) Internal resistance Dynamic (resistance and capacity) Temperature (optional)

SAFETY	
SAFETY CONTROLLERS	Emergency stop (two channels) DC-Stop (two channels) DC-On (two channels) Signal of ISO-controller
ISO-CONTROLLER	Insulation resistance HV Plus and HV Minus Analog processing of insulation resistance Safe disconnection of DC contactors
SAFETY VERSION ACCORDING TO ISO 13849 / EN 60204-1	Galvanically isolated IGBT half bridges
Verification of the functional safety (audit trail) incl. creation of validation certificate ISO 13849	

HORIBA provides advanced mobility leadership and comprehensive engineering and measurement expertise to support the gradual shift from traditional propulsion, to fully electrified solutions.

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