# TRUEDATA X-HVE

## High-Voltage Emulation

- Advanced IGBT technology with extremely low noise design
- Programmable standard and user-own battery models
- 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
- Manual interaction opportunity with a modern touch interface

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The HORIBA FuelCon TrueData X-HVE HV emulators reproduce the behavior of electrical energy storage in a functionally and electrically way. With a single unit voltages up to 1,500 V, currents up to 1,500 A, and outputs up to 1,000 kW can be covered. Parallel alignment enables higher currents and powder.

The modern IGBT technology enables optimized energy recovery. The stored simulation models allow the emulation of real batteries. Furthermore, own, discrete-time, continuoustime or hybrid Simulink and Stateflow models can be processed.

## GENERAL FACTS

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|---|---|
| OVERALL EFFICIENCY AT POWER RATING | ≥ 95 % |
| TOTAL HARMONIC DISTORTION THD | 3.3 % |
| Noise | ≤ 70 dB (A) at 1 m (160 kW, 600 A) |

## ELECTRICAL SPECIFICATION

| | |
|---|---|
| POWER RATING | 20 - 200 kW in 20 kW steps<br>200 - 400 kW in 50 kW steps<br>400 - 1,000 kW in 100 kW steps<br>further types on request |
| VOLTAGE RANGE | 100 V; 300 V; 600 V; 800 V; 1,000 V; 1,200 V; 1,500 V (optional negative) |
| CURRENT RANGE | ± 600 A, ± 1,000 A, ± 1,500 A |
| 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 |
| CURRENT RISE TIME | < 3 ms (10 - 90 %) on resistive load |

## EMULATION

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

## SAFETY

| | |
|---|---|
| SAFETY CONTROLLERS | Emergency stop (twoc channels)<br>DC-Stop (two channels)<br>DC-On (two channels)<br>Signal of ISO-controller |
| ISO-CONTROLLER | Insulation resistance HV Plus and HV Minus<br>Analog processing of insulation resistance<br>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

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