Engineering Excellence in Test Stand Applications

E-AXLE DYNO DRIVE

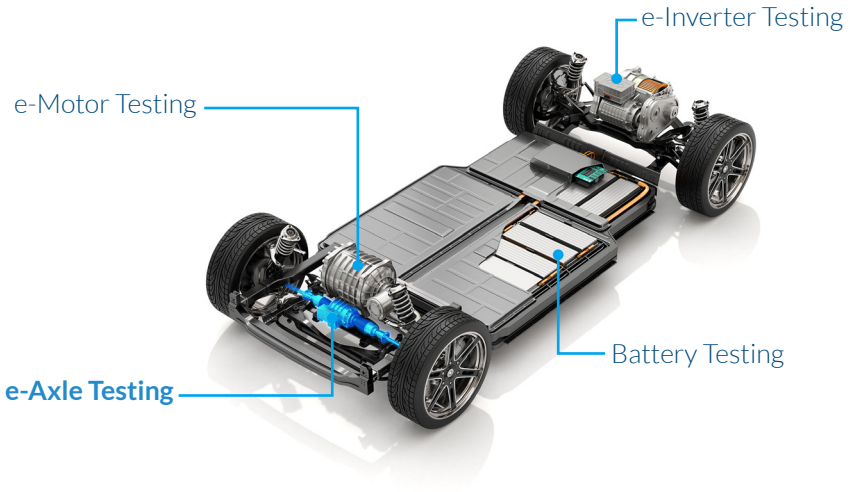
TST200 SERIES

Precise, efficient powertrain testing with ultra-low energy consumption

The UNICO E-Axle Dyno Drive is a leading-edge testing system combining different drive elements with a common DC power source. It can handle power from 50 kW to 1000 kW, even more, if needed. This system is designed to work with common and advanced motor types, offering efficient and comprehensive testing capabilities. Whether you need steady, quick, or dynamic testing, this system can do it all and works well with any control system. It comes in designs that can be air or water-cooled and includes many safety features for reliable and safe operations.

APPLICATIONS

- Development
- Characterisation
- Efficiency Testing
- Calibration of control unit
- Performance testing
- Durability testing
- Validation



FEATURES

- Common DC-Bus: reduces both energy consumption and size of incoming AC Supply.
- Optional Resonance Converter: removes the need for an Isolation Transformer, saves space, reduces heat loss and improves efficiency by a factor of (x4).
- Total Torque Control: Ensures the precise simultaneous management of both motor torque and motor speed, for Torque Vectoring applications.
- Closed Loop Control: Guarantees accuracy in motor control through continuous feedback and minimise uncertainty error during efficiency testing.
- DC Disturbance Rejection: Option for remote voltage source to maintain a stable operation by effectively managing power fluctuations resulting from 6-Step inverter operation
- High Accuracy Torque Estimator: Delivers reliable torque readings for improved dynamic control.
- Extended Overload Capability: Provides robust performance even under strenuous conditions.
- Remote Voltage Sensing: to compensate for voltage drop in DC-Supply cables.

BENEFITS

LOW ENERGY CONSUMPTION
Minimize energy use while maintaining high performance

COMPACT DESIGN
Saves space and enhances ease of integration into existing setups

WIDE TORQUE RANGE
Delivers versatile application potential from low to high torque

WIDE DC VOLTAGE RANGE
Accommodates a broad spectrum of DC voltages, enhancing compatibility

FLEXIBLE
Features flexible settings for remote voltage and current measurements, reducing infrastructure costs

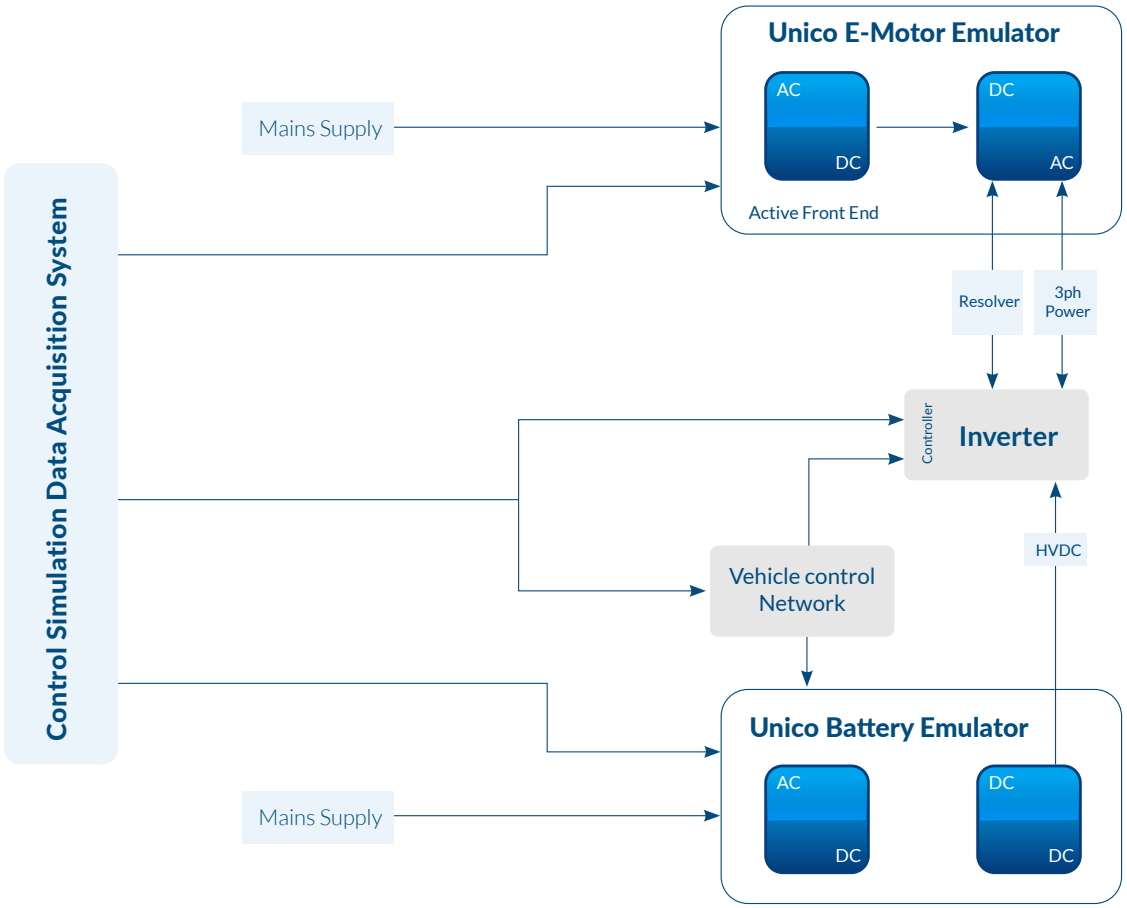
REDUCED HARMONICS
Lowers power disturbances and enhances quality

(TST200-06.2024_Released)

E-AXLE DYNO DRIVE - TST200

Unico's E-Axle Dyno Drives' feature a modular inverter design that fully regenerates energy back to the three-phase power grid. This system includes a proprietary digital current regulator and a cutting-edge controller that facilitates seamless operation of various AC dynamometer motors—including Asynchronous Induction, Synchronous Permanent Magnet, and Internal Permanent Magnet motors—without the need for the traditional current-loop setup.

Our drives utilize IGBTs with a switching frequency of up to 30kHz, delivering the necessary performance to operate high-speed dynamometer motors. This capability ensures accurate matching of the high-speed requirements of the E-Motor under test.



The drives deliver remarkable speed and torque responses, with acceleration rates reaching 300,000 rpm per second, enabling precise testing under conditions that simulate realistic load resistance for various applications such as aggressive launch control, motoring, hill climbs, and diverse throttle settings. For Noise, Vibration, and Harshness (NVH) testing, the ultra-quiet operation mode supported by dual current regulators proves ideal, suitable for use in both anechoic and hemi-anechoic test cells.

(TST200-06.2024_Released)

Enhance the development and testing of your electric vehicle propulsion systems with Unico's E-Axle Dyno Drive, designed to simulate resistance accurately. This advanced tool allows for comprehensive evaluation and optimization of EV systems under controlled conditions, ensuring your products meet the highest standards of performance and reliability.

Specifications

AC Input	480VAC, 3Ph, 50/60Hz (other voltages available on request)
Ambient	Up to 40°C, max 1000m above sea level, 95%RH non-condensing
Enclosure	IP54 / NEMA 1 (other options available upon request)
Cooling	Water cooled or air-conditioned cabinets available
Cabinet Paint	RAL 7035 Rough Semi-gloss Poly Powder finish
Certification Compliance	UL, CE, UKCA (other certifications available)
Control modes	Torque, speed PID available, or controlled by test cell automation
Control	Local and remote
Built in remote interface	Analog as well as RS-422, RS-485, two ports (other interface and protocol, see options below)
Safety and control interlocks	Hardwired, opto-isolated, software configurable
Data logging	Data sampler through UEdit®
Dynamometer	Induction, permanent magnet
Encoder feedback	Most encoder, resolver feedback supported
Inline torque meter	Industry standard inline torque meters supported
Battery emulator	See Battery Emulator Brochure

Options

Isolation transformer	Various sizes as required
Remote voltage sense	Available
dV/dT Filter	Standard for > 690 Vac (Optional <690Vac)
DC Snubber Circuit	Optional for systems > 800Vdc
Cabinet Paint Finish	Customer Specific
External communication interface	• CAN open • Ethernet • Modbus Plus • CC-Link • EtherCAT(async) • Profibus DPV1 • ControlNet • Interbus • Profibus Master • ControlNet • LonWorks • EtherCAT (sync)

Specifications are subject to change without notice

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