



Racing Test Solutions

Combustion Analysis, Data Collection, Dynos & Controllers, Simulation

A&D Technology has a variety of efficient testing solutions that get race cars from the shop to the track faster. If your garage needs an easier and more accurate way to simulate, control, automate, manage, collect, store, or analyze test data, A&D can put together a custom optimized solution.



Dual Loop Dyno Controller

Our dual loop digital control rack for AC or EC dynos allows for simultaneous control of both the dyno & throttle actuator. Our controller works with a wide variety of dynamometer equipment. Whether you already have a dyno, or you need A&D to procure and install one in your garage, we will be sure to customize the best equipment and configuration to meet your test requirements and budget.

- Stand Alone or Fully Integrated Solution
- Digital PID Control for Torque, Speed, ECU setpoints.
- Multiple Communication Protocols: ETHERCAT, PROFIBUS
- Visualization Module LCD Touchscreen

Dynamometer Engine & Vehicle Testing

Dynamometer control systems simulate real-world conditions and measure the performance of race cars in a controlled environment. By adjusting a variety of variables, the control system can simulate different road conditions, including acceleration, hill climbs, or various driving speeds.

When testing dragway cars, the dyno control system is configured to mimic the conditions encountered on a drag strip. This typically involves setting the dyno to provide a consistent and predetermined resistance level that matches the friction and aerodynamic forces experienced during a drag race launch.

This allows them to optimize various parameters such as engine tuning, transmission settings, and aerodynamics to achieve maximum acceleration and speed on the drag strip.



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Combustion Analysis

Our Phoenix real-time Combustion Analysis System helps race cars achieve peak performance and reliability on the dragway. By precisely measuring the composition of exhaust gases, such as oxygen, carbon dioxide, and nitrogen, combustion analysis provides insights into combustion efficiency and fuel-air mixture ratios. This data enables engineers to fine-tune engine parameters, such as ignition timing and fuel delivery, maximizing horsepower output while ensuring compliance with environmental regulations.

- Compact and Stackable Design
- Built-in Web-Based Configuration
- No Connected-PC Required for Data Acquisition or Processing



Real-Time Simulation

Our ADX portable Real-Time Simulation and Control System offers high-speed measurements vital for capturing real-time data from the race car, such as speed, acceleration, engine temperature, and torque. Its multiple I/O options can connect to multiple vehicle sensors simultaneously to monitor numerous performance metrics in real-time. When integrated to control a dyno, the ADX's simulation capabilities allow for on-the-fly engine adjustments to achieve optimal settings for race conditions.

When used as a Hardware-in-the-Loop (HIL) System, the ADX can simulate inputs which is useful for pre-checks before a race to test the car's electronic responses without physical trials. It can connect and coordinate multiple systems across the vehicle to manage separate systems like engine control, ABS, and transmission simultaneously from a single garage setup.

- MATLAB/Simulink Integration
- Stand-Alone Touchscreen Functionality
- Ethernet & CAN Communications
- Linux Real-Time OS
- Multiple I/O Options



Test Automation Garage Management

Our iTest test automation and control solutions offer pre-configured options customized for engine and powertrain racing test systems to optimize race car performance and reduce human error. iTest's high data acquisition rates are critical for capturing rapid changes in parameters such as speed, torque, temperature, and pressure.

Real-Time simulation and calibration are essential for tuning the cars to optimal race conditions. This includes dynamically adjusting the PID loops, which are crucial for controlling engine behaviors under race conditions. iTest can integrate and acquire data from multiple third-party measurement devices for streamlined diagnostics and system checks.

Seamless compatibility with A&D's LabWorX lab management system means that you can efficiently manage multiple test setups or different aspects of race car testing concurrently, enhancing productivity and ensuring all systems are race-ready

- Customized Testing Capabilities
- Complex Robust Test Schedule Programming
- Repetitive Test Automation Sequences
- Integrates with A&D's scalable iConnect synchronized data acquisition I/O modules
- Detailed Data Analysis & Visualization Tools

