Product Data Sheet

LHP HIL TEST PLATFORM (HTP)

Smarter test systems for advanced electronic controls.

LHP/HTP provides a reconfigurable platform for Hardware-in-the-Loop testing from a single product to an entire product line. Engineers can define test procedures that can be executed manually, automatically with test scripts, or extracted from the system requirements. The LHP/HTP provides a high-fidelity test platform with real-time plant model execution and extensive signal conditioning hardware for faithful signal generation and load testing. Use the LHP/HTP to find hardware/software interface issues, real-time priority scheduling problems and automate system regression testing across the entire product operating envelope.

The LHP Hardware-in-the-Loop Test Platform (HTP) leverages tools, experience, and partnerships with National Instruments and The MathWorks combined with the LHP Engineering Solutions body of knowledge to deliver powerful test assets at reasonable costs.

The HTP uses NI hardware and software (LabVIEW/VeriStand/TestStand) to deliver extraordinary I/O capability, processing power, test management, user interfaces, and reporting. The LHP HIL engineering team has vast experience in electronic hardware, embedded controls, FPGA programming, and Simulink real-time plant modeling which provides the skills to faithfully simulate normal plant operation or complex fault conditions. The system architecture, DUT interfaces, and signal conditioning are custom configured for each application while maximizing re-use of commercial off-the-shelf and previously developed solutions.

NATIONAL INSTRUMENTS Silver Alliance Partner

MathWorks Partner

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Functional Safety Testing

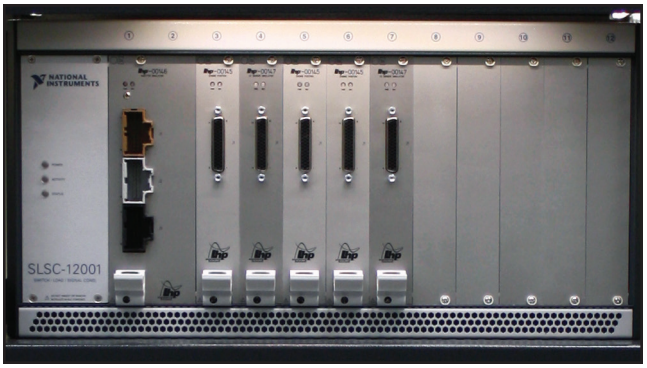
Contact LHP Engineering Solutions experts to discuss the process to qualify test systems for functional safety standards such as ISO 26262. LHP can assess the safety requirements of the product being tested to determine the Tool Impact and Tool Error Detection level requirements on the test system. Let LHP lead the way to delivering a functional safety qualified HIL Test System.

Custom Configurability

LHP Engineering Solutions can deliver a complete test solution to meet your requirements. Contact LHP to discuss how our engineers can quickly develop and configure your test systems, create plant models, and create data-driven, portable, and re-usable test scripts that will take your testing to the next tier.

Signal Conditioning

LHP Engineering Solutions supports the NI SLSC signal conditioning ecosystem for an open architecture solution using standard products. LHP provides a complete signal conditioning solution for Engine Control Module test systems. The LHP Engine Test Suite for SLSC provides engine position, fuel injector and exhaust gas sensor simulation.



Example Hardware Configuration for ECM Testing

- PXIe/PXI chassis w/Xeon 8-Core controller w/Virtex-5 FPGA
- I/O capability to handle multiple ECMs
- Gigabit Ethernet interface
- Analog, digital, PWM, timing, VR, & hall effect speed signals
- Arbitrary signal generation for Engine Position Signal patterns
- Engine angle synchronous data acquisition
- Real-time plant model at 1kHz loop rate
- DUT Power Supply 0-80 VDC at 60 A (115 or 230 VAC input), 1200 W max
- Virginia Panel Connectors at bulkhead interface
- Modular Signal Conditioning to allow easy adaptation for multiple DUT platforms
- Demo Unit I/O Channels:
  - 28 fuel injector loads with timing/current measurement capability
  - 6 CAN 2.0B buses with “rest of bus” simulation
  - 96 analog outputs (simulate resistive or ratiometric sensors)
  - 32 digital outputs (simulate switch inputs)
  - 8 analog inputs (measure DUT performance)
  - 33 low current loads (Test low-side or high-side driver outputs)
  - 24 high current loads (Test heater, motor, solenoid controls)
  - 12 frequency outputs (Simulate VR or Hall speed sensors)
  - 4 frequency inputs (Measure DUT PWM outputs)
- Front panel interface:
  - Test points for all analog outputs
  - LED indicators for digital outputs and loads
  - Test points with current measurement output for injector loads
  - Test points for all Frequency I/O
  - Access to CAN buses
- Optional: Fault Insertion and/or Breakout Box

Also Available

LHP Technology Solutions also offers the LHP/DTE (Desktop Test Environment) for software development HIL testing, the Engine Control System (ECS) for engine research and development, LHP Panthera® RCP Suite for rapid controls development and the LHP/RPU (Rapid Prototype Unit) for model testing.

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