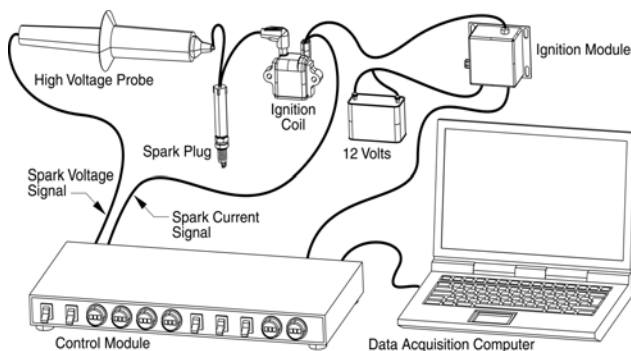


## Programmable Ignition System

The Programmable Ignition System is intended for engine dynamometer testing. This system allows the operator to manually adjust the spark characteristics (peak current, sustaining current, current decay rate, duration, multi-spark parameters, etc.) from the dynamometer control console. A significant advantage of this approach in research and development applications is the ability to rapidly reconfigure the spark while the engine is running (as opposed to shutting down the engine to change the ignition coils). This makes it possible to conduct back-to-back comparisons between candidate spark configurations under virtually identical operating conditions.



A typical setup for engine testing is shown at left. The control module is equipped with a built-in high speed waveform digitizer to monitor the spark current (to guide adjustments) and to acquire spark current and voltage waveforms. The interface to a PC is via either a parallel port or a USB port. The delivered spark energy is calculated by the interface software based upon either actual voltage measurements (using a high voltage oscilloscope probe) or an assumed arc voltage (similar to an ignition energy bench test). Analog outputs are also provided for spark current and energy.

### Applications

The Nexum Programmable Ignition System is a versatile development tool for determining the ignition requirements of a given engine design or operating condition. Typical areas of interest include:

- optimum spark characteristics for Direct Injection Spark Ignition (DISI) engines
- lean operating limits
- EGR tolerance
- cold starting
- idle stability

### Models and Pricing

Single channel models (for single cylinder research engines and multi-cylinder engines with distributors) are available starting at \$6,500 U.S.D. Multi-channel models (using a coil per cylinder, coil near plug configuration) are made to order to account for different triggering, packaging and electrical power requirements. Contact Nexum for details. Custom ignition systems can also be provided for automotive and aerospace applications requiring exceptionally high current and energy levels. One of our systems, which is used for Pulse Detonation Engine (PDE) research, discharges 8 Joules of energy at up to 2000 Amp peak current levels.

### Contact/Technical Support

Mr. David Gardiner, Director, Automotive Research and Development  
[sales@nexumresearch.com](mailto:sales@nexumresearch.com)