

## Missile Simulation Testing



Missile simulation testing is a vital method to verify the expected performance of a missile without actual destructive live fire tests. During the missile simulation test, a test set is used to provide static and dynamic test nodes of the missile and check (simulate) various conditions of flight and how the test article reacts to the "set conditions." The missile simulation test criteria are derived in a random fashion to properly exercise the various flight parameters of the missile and to give the test manager a complete analysis of the accuracy of the control functions used to direct the missile to its target. The Missile Simulation Test Stand provides thorough testing of the missile's functional characteristics while ensuring the relative accuracy of the control functions used to test the article.

Major US missile manufacturers and test centers have successfully used KineticSystems' data acquisition solutions for more than 15 years during missile simulation testing. Specifically, KineticSystems' V387 Digital I/O module has been used to set control functions in a missile simulation test set. The unique features and versatility of the V387 differentiate it from competitive product offerings, and cement it as the preferred digital I/O module for this important application.

The V387 module provides up to 128 channels of digital input and/or output (TTL option), and is configurable on a 32-channel basis through four interchangeable mezzanine cards allowing for an assortment of other I/O options. Available digital I/O types include isolated digital input at 5, 12, 24 and 48 volts as well as TTL levels, relay functions, and AC inputs.

Control functions required for the test article are derived from the various digital I/O of the V387 and are part of the overall testing functionality profile necessary to properly test the missile's critical guidance electronics.

Additional standard features of the V387 module include programmed trigger generation or interrupt on pattern recognition or change-of-state detection and programmable contact bounce suppression on inputs. These features are proven to be ideal in a test simulation application where a variety of missile flight characteristics are measured as part of the testing function.

Building upon extensive VXI experience, KineticSystems continues to innovate and provide additional high-performance cPCI/PXI solutions. Similar to the V387, the CP387, a discrete I/O module based on the CompactPCI/PXI platform, is now available from KineticSystems. The CP387 has extremely adaptable profiles, with mezzanine card options that allow for I/O channel selection, including TTL, optically isolated relays and solid-state switches. The CP387 is of great interest to customers who have migrated from legacy VXI systems to CompactPCI/PXI platforms.

However, due to huge investments in legacy systems, the existing knowledge base of engineers, and already developed software that is currently available, VXI products are still widely used in the aerospace industry and especially for missile simulation testing.

KineticSystems' data acquisition products are used worldwide in various aerospace applications such as Aircraft Fatigue Testing, Jet Engine Test Cell Upgrade, Rocket Steering Motor Systems, Universal Airframe Structures, Wind Tunnel Data Acquisition and many more. Additional fields of use include research and development, automotive, defense, and communications.

As a DynamicSignals brand focused on the Test & Measurement industry, KineticSystems provided data acquisition solutions for a wide range of applications across the main platforms of CompactPCI/PXI, VXI, PCI, and CAMAC.

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