



WHITE PAPER

THE FUTURE OF ARMAMENT TEST SYSTEMS

UEI hardware and I/O ensures the new military Common Aircraft Armament Test Sets are dependable and accurate for today's smart armaments



**United
Electronic
Industries**

www.ueidaq.com

Upgrading Armament Test System to Modern Standards

Common Aircraft Armaments Test Set (CAATS) is the replacement for the 25-year old Common Rack and Launcher Test Set (CRALTS). The new CAATS developed by prime contractor Science Applications International Corporation (SAIC) will be the new standard to test today's smart armament systems. This sophisticated system is designed with United Electronic Industries (UEI) hardware and I/O solutions that offer ruggedness, I/O flexibility and longevity. Some of the aircraft that the system will be testing include:

- Tests Navy and Marine Corps combat aircraft—AH-1/Z (Attack Helicopter), UH-1N/Y (Venom Helicopter), EA-6B (Northrop Grumman Prowler), AV-8B (McDonnell Douglas Harrier II), F/A-18A-F (McDonnell Douglas Hornet), All H60's (Sikorsky Black Hawk Helicopters), and C-130J (Lockheed Martin Super Hercules)
- Pre-Planned Product Improvement for Joint Strike Fighter F-35B/C (Lockheed Martin Lightning II) Joint Miniature Munitions Bomb Rack

The requirements for MIL grade aircraft munitions and armaments test systems are most demanding. CAATS was developed to meet the needs for test equipment on legacy 4th & 5th generation and future aircraft weapon systems. UEI had the ideal product offerings to make CAATS a reality.

Designing CAATS for Success—How UEI Supports The System Build

CAATS is designed to ensure successful test/deployment and troubleshoot various military armament and munitions-related equipment in a go-no-go fashion. Armament tests include missile launchers, bomb racks, pylons (smart and legacy) and future devices that will span various weapons systems.

CAATS replaces the legacy CRALTS (A/E37T-35A) due to major reliability and obsolescence issues (VME replacement) that affected the test sets ability to support future weapon system requirements. CAATS is designed for flexibility to grow with increasing electronic content requiring more signal intensive I/O and sophisticated testing applications. SAIC, using UEI hardware and I/O, developed CAATS to be a more robust testing system for today's smart armaments. UEI's UEIPAC 1200R RACKtangle was selected by the prime contractor as the system controlling CPU while at the same time providing the bulk of the required I/O interfaces.

CAATS Build Requirements

Handles all of the various upgrades in avionics and armament technology required for today's capabilities

- Cannot rely on obsolete parts or legacy solutions
- Needs to be agile and rugged
- Have systems capable of use on new and old munitions
- Have advanced testing functionality and troubleshooting capabilities

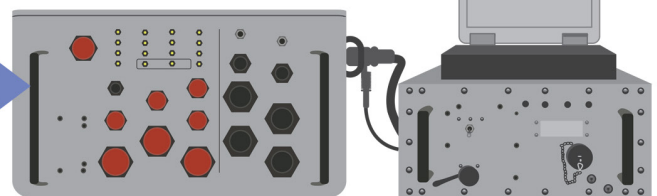
The Ideal Embedded System



UEIPAC 1200R RACKtangle
12 Slot Programmable Automation Controller

- Tested to -40 to +85°C, 5g Vibration, 100g Shock
- 5.25" x 6.2" x 17.5" (3U)
- Supports VxWorks and Linux operating systems
- 12 slots for a breadth of I/O to meet requirements

CAATS SYSTEM Designed by SAIC



- Gigabit Ethernet connectivity
- Up to 300 analog or 576 digital I/O per PAC
- Extremely cost effective

CAATS Typical Tests

- Bomb & Missile Pylon Testing

CAATS will also test defective equipment with the ability identify faults with minimal intervention. It will allow technicians to diagnose and trouble shoot as well as perform operational and functional check-out and fault isolation. Technicians can easily create new tests without modifying hardware or software.

Common Considerations

A test set must easily move to the aircraft or component being tested and is required to operate in a Backshop environment. Cables need to be self tested and field repairable. Test set must be highly durable and operational in extreme cold and hot environments.

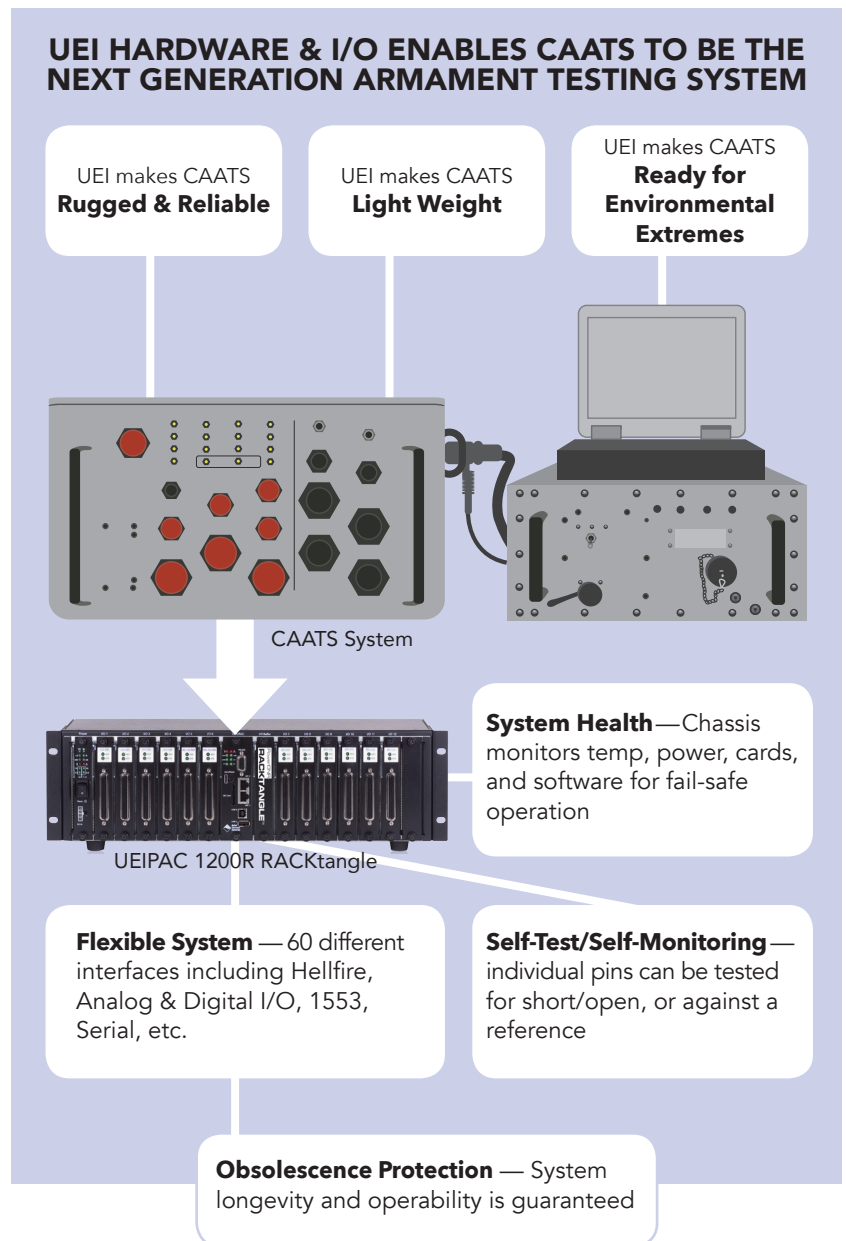
The UEI Solution—UEIPAC 1200R for Durability and Flexibility

Durability: The CAATS system is dependent upon UEI hardware and I/O to reduce system weight and costs, while increasing durability. The ruggedness of the UEI rack chassis and flexible I/O options provided an ideal solution for SAIC for CAATS success. UEI is ¼ the weight and reduced the “packaging” requirements with portability going from 4 marines to 2 marines. With operating temperature of -40° to +85° C, 5 g vibration, 100 g shock, up to 70,000 ft altitude, UEI hardware easily handles the environmental requirements from the desert to the mountains. Plus UEI hardware is tested to MIL-STD-461/810/1275/704 requirements.

Flexibility: The UEIPAC 1200R RACKtangle allowed for a wide range of I/O options and easy interchange with all types of I/O including: analog I/O, digital I/O, relay and relay control, MIL-STD-1553, and serial I/O. UEI designed and delivered a Hellfire (M272) missile interface which is now available as a COTS product.

Capability: UEI has built in self-test capability on the chassis, card, and channel level. Hardware can be checked without disconnecting the field wiring. Channels can be checked for opens, shorts or even compared to a reference to assist in the diagnoses. The on board monitoring gives the user the confidence the data acquisition and control unit is operating error free.

Dependability: UEI has a 10-year availability guarantee, which is 10-years from your last buy with a 2-5 year hardware warranty. UEI hardware has a high MTBF and low MTTR. Immediate out of box use is ensured as a 100% test all of our hardware is done before shipping, resulting in a return rate of <0.1% which guarantees years of dependable operation.



CAATS system is designed to test the following Pylon, Bomb Rack and Launcher systems

Pylons

SUU-62/A, B/A
SUU-63/A, A/A, C/A
SUU-78A/A
SUU-79A/A
SUU-80A/A
F/A-18E/F I/O Cables (10)
AMAC Wiring
ADU-773A/A

Bomb Racks

BRU-14/A
BRU-15/A
BRU-32A/A, B/A
BRU-33/A, A/A
BRU-36A/A, B/A
BRU-41/A
BRU-42/A
BRU-55/A, A/A
BRU-70

Launchers

LAU-7A/A, B/A, C/A
LAU-7D/A, E/A, F/A
LAU-115C/A, D/A
LAU-116A, A/A, B/A
LAU-117A (V) 2/A
LAU-118 (V) 1/A
LAU-127D/A, E/A, F/A
M272, M279
M229, M229 HH
LAU-10D/A
LAU-61C/A, LAU-68D/A, F/A,
SUU-25F/A

About United Electronic Industries

United Electronic Industries (UEI) is a leader in the data acquisition and control, data logging, and embedded automation controller markets. Our cube, rack and military chassis provide a rugged and powerful platform that is ideal for many applications in the industrial, aerospace, military, and simulation fields – plus many more! Our chassis are uniquely flexible, capable of being deployed as a remote Ethernet I/O node, a standalone data logger, or an embedded controller. We offer incredible I/O flexibility with over 60 I/O boards available which include analog/digital I/O, avionics (including 1553, 429, AFDX™, 664, 708/453, 825), speed/freq input, CAN-bus, serial I/O and more. UEI supports all popular OSs such as Windows, Linux, VxWorks, QNX and other RTOSs as well as all programming languages. We also offer complete and seamless support of all major application packages, including LabVIEW™, MATLAB® and Simulink™.

