

# Test your weapons systems accurately and inexpensively

Our innovative digital voltage detector provides  
accurate and cost-effective testing



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## The Problem

Flightline technicians extensively test the weapon systems of aircraft to verify that the weapons will fire only when requested. If these weapons jettison on their own, they can endanger the lives of pilots, ground crew, and other unintended targets. To avert such tragedies and ensure the safety of our warfighters, technicians use voltage detectors as an integral part of their Armaments Circuits Preload Test Set. As part of this test set, voltage detectors compare the actual voltage in weapon circuits to the expected voltage.

However, the traditional, cylindrical (“beer can”) voltage detector is not robust enough to perform this job effectively. For example, it can be jolted out of calibration when it rolls off the wing of a fighter like the F-16. This mere 7-foot drop can cost the U.S. Air Force a staggering \$8,000 if the traditional detector is irrevocably damaged. The cost of such an innocent mishap is further increased by the amount of lead-time required to replace this detector, which contains obsolete components that are not readily available. Also, the lead-time required to calibrate the traditional detector translates into wasted time and money. When it is dropped or jarred, it has to be recalibrated by a Precision Measurement Equipment Lab (PMEL) or by the original manufacturer, a calibration that is very expensive and that could take several weeks.

Plus, if repairs to a traditional voltage detector will cost more than 75% of the original cost, the Air Force will throw the detector away. Thus, the Air Force and other military agencies expend additional money buying more of the unreliable voltage detectors than they need.

## The Solution

To solve such problems inherent in traditional voltage detectors, Williams-Pyro, Inc. has developed a Digital Voltage Detector that is more accurate than traditional products and more cost-effective than similar products in today’s market. Our detector is a self-contained, hand-held electronic module with

- ▶ A modern microprocessor
- ▶ Surface mount technology
- ▶ A user-friendly LCD display
- ▶ A commercial off-the-shelf battery

# The Technology

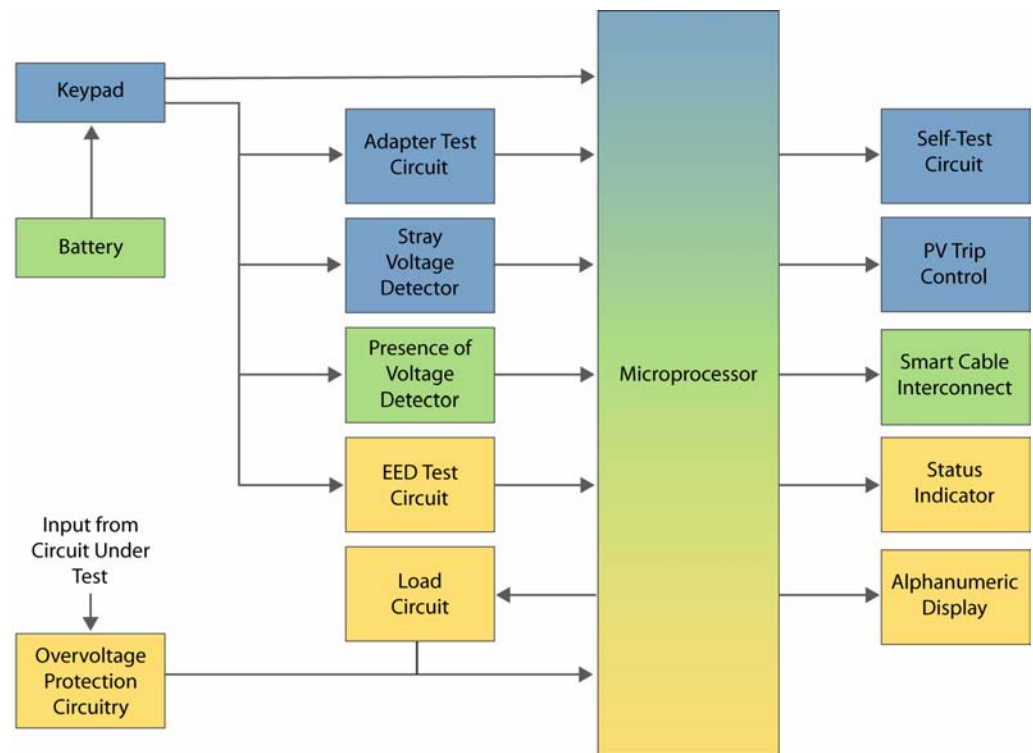
## Specialized, customizable tests

Our Digital Voltage Detector performs five specialized tests that safeguard the functionality of a weapon circuit:

- ▶ **Presence of Voltage test**  
Measures and displays input voltage to determine whether the weapon will fire when requested. Technicians can manually change the voltage threshold through the Setup menu.
- ▶ **Electro Explosive Device test**  
Checks that a weapon circuit has enough voltage to fire when requested.
- ▶ **Stray Voltage test**  
Detects stray DC and AC voltage that might later cause a misfire.
- ▶ **Adapter test**  
Checks the continuity of the adapter cable that connects the Digital Voltage Detector to the weapon circuit.
- ▶ **Self-test**  
Checks its own battery status and analog circuits, performs a self-calibration cycle, and stores correct calibration data to permanent memory.

## Modern microprocessor

These test features are made possible by a modern, microprocessor-controlled design. Rather than using exclusively analog circuits to measure voltage, our improved detector receives input signals that its software digitizes and analyzes. Because of this software, our Digital Voltage Detector offers enhanced display and troubleshooting capabilities, as shown in the diagram below:



## Commercial off-the-shelf battery

Completing the package is a commercial off-the-shelf battery. Unlike the traditional voltage detector, our voltage detector contains a battery that is inexpensive and easy to replace. The Digital Voltage Detector will take two types of batteries:

- ▶ Standard AA alkaline batteries, which provide more than 100 hours of continuous use and cost less than \$2.00
- ▶ Rechargeable nickel metal hydride (NiMH) batteries, which provide more than 25 hours of continuous use on a full charge

## The Benefits

Feature	Benefit
Standard size	Fits easily into the slot reserved for the C9216-2 or the C9216-3 “beer can” voltage detector
Rectangular shape	Will not easily roll off the wing
Robust package	Withstands a 7-foot drop from the wing
Self-calibrating	Does not require calibration if dropped from the wing
Repairable	Can be repaired at the backshop
Commercial off-the-shelf battery	Contains a battery that is inexpensive and easy to replace
Modern components	Reduced cost and significantly shorter lead-time for ordering replacement units
High voltage operation	Measures voltage up to 320 volts DC
Electronic protection	Electrically protected from overvoltage and overcurrent up to 400 volts DC / 250 volts AC
Two-way compatible	Replaces the 467-2 and 467-3 voltage detectors with limited impact on the technical orders

## The Company

Williams-Pyro, Inc. is a woman-owned small business located in the technology corridor of Fort Worth, Texas. Founded in 1963, we have more than 40 years of experience designing, prototyping, and manufacturing products such as weapon systems test equipment, cable assemblies, adapters, and connectors. These products include customized adapters that test for spurious current or voltage in weapon systems of the F-4, F-14, F-15, F-16, F/A-18, F-111, A-10, and A-7. We have a profitable current product line of more than 100 types of military and industrial electrical connectors and fasteners.

An ISO 9001-certified company since 1998 and Department of Defense subcontractor since 1965, we were recognized in 2003 and 2004 by the Defense Supply Center Richmond for our perfect quality and on-time delivery record, a record we have maintained for the last five years. The keys to our success include rapid prototyping capabilities, quick turnaround, superior facilities, a multi-disciplined engineering team, mass production capabilities, and a finely honed focus on solutions.

### Core Competencies

- ▶ Designing weapon systems test equipment
- ▶ Wireless communication
- ▶ Smart sensors (IEEE 1451)
- ▶ Ad-hoc networking
- ▶ RFID technologies
- ▶ Digital signal processing
- ▶ Artificial intelligence and reasoning systems



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