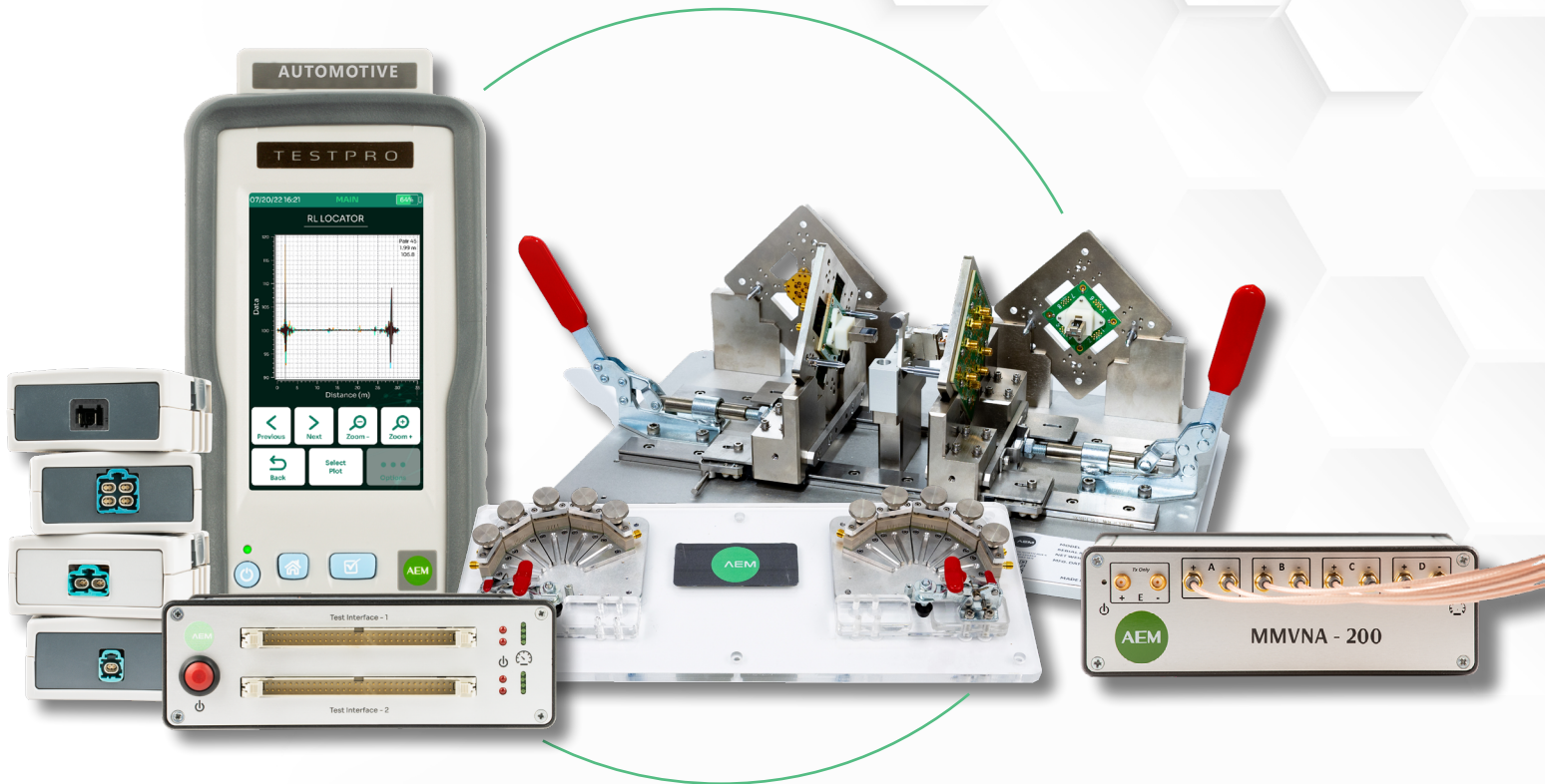# AEM Wire Harness and Components Testing Solutions

Characterizing twisted pair and coax cables and components is becoming more and more critical, as high data rates and reliable communications within the modern automobile increases, particularly with use of artificial intelligence. The need to characterize balanced transmission is finding increasing adoption with the proliferation of AI, safety features, entertainment, occupancy comfort, and hybrid and electric system management.

AEM's wire harness and components test solutions include small form factor analyzers used in R&D and Manufacturing environments, as well as ruggedized in-car test solutions, design for manufacturing and service center in-vehicle harness testing.

DESIGNED FOR MANUFACTURERS OF

Twisted Pair and Coax Cables
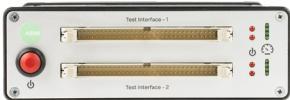
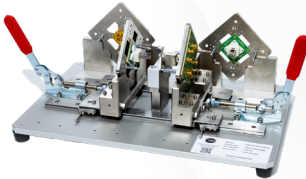Wire Harness / Wire Harness Test Tables

Connectors

Transportation Manufacturers
Automotive | Trucking | Rail | Air

TEST SOLUTIONS SUMMARY

TestPro Automotive Learn More	Portable field test solutions support troubleshooting of the installed wire harness.
	Provides distance to fault (TDR) measurements and identifies if fault is open, short, or an unexpected kink.
	Interchangeable test adapters support a variety of connectorization to wire harness.
	Test platform support 3GHZ and 6GHZ systems.
MMVNA-200 Learn More	Compact benchtop 8-port vector analyzer.
	Supports wide range of S-parameter selections to build cusom test routines.
	Unlimited plots, and traceable test reports.
AHT-128 Learn More	PC-based cable continuity and resistance measurement analyzer.
	Tests resistance but also identifies open circuits, short circuits, mis-wires and pin-to-pin connectivity.
	Test results can be saved and uploaded to a PC for analysis. Users can clearly determine cable pin wiring easily and efficiently.
Connector Test Fixtures Learn More	Through use of custom PCBs, any type of connector can be fully characterized for RF and ocntinuity parameters.
	No damage to connector allowing 100% inspection.
	Works in tandem with MMVNA-200.
Raw Cable Test Fixture	Accurate RF parameter measurement of multi-port differential cables.
	Easy to attach and detach DUT.
	Works in tandem with MMVNA-200.

TestPro Automotive

PRODUCT OVERVIEW

TestPro Automotive allows you to test the automotive wire harness while installed in the vehicle. This makes postproduction line testing and troubleshooting, as well as service center troubleshooting much easier, than having to deploy a network analyzer and PC. TestPro offers a variety of hot swappable test adapters, for your specific testing needs.

KEY FEATURES

Distance to Fault Identification:
The tester utilizes cutting-edge technology to detect even the smallest kinks, faults and defects and reports distance to the fault.

Intuitive User Interface:
Visualization of wire harness connectors and where fault has been identified allows service technicians to quickly understand the location in the vehicle the fault is location and work to remediate the fault. Analytics views show faults in plot form providing different types of views of a fault that work best for each user.

Data Analysis and Reporting:
Generate test reports that can be uploaded to the TestDataPro results management database and viewed by distributed team members.

Customizable Testing Limits:
Create tailored testing limits for each wire harness using Smart Trace.

Ruggedized For Field Use:
Rubberized protective shell protects against drops.

BENEFITS FOR CAR MANUFACTURERS

Improved Quality Control:
The tester enables you to detect defects in the installed wire harness on the production floor prior to vehicle shipping.

Increased Efficiency:
Rapid testing and diagnosis save time and resources at both the manufacturing site and service centers.

Enhanced Reliability:
Ensure the wire harness systems of the vehicles meet the highest standards, building trust with your customers
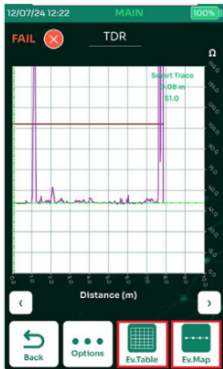
Reduced Warranty Claims:
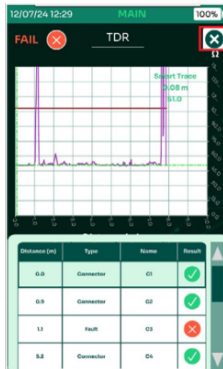Identify and fix issues before they become major problems, minimizing warranty claims and associated costs.

TEST RESULTS
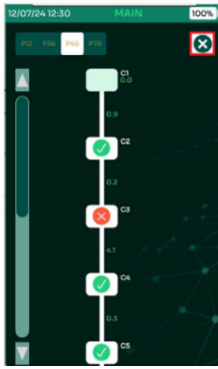
Test results are displayed in four ways:

1. Event Graph

2. Event Table

3. Event Map

TestDataPro is a test results management software comes standard with TestPro Automotive. TestDataPro allows organizations to keep a record of wire harness performance over time. TestDataPro Cloud facilitates collaboration with geographically dispersed teams when troubleshooting an issue and engineering expertise is needed to help identify an issue.

4. Return Loss Frequency Domain Plot

TestPro Automotive Deployment Diagram
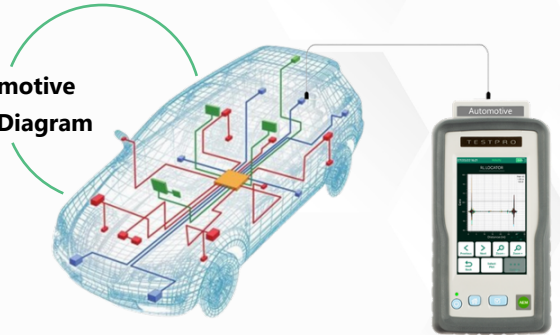
ADAPTERS

AD-1P-APTIV-AMEC
Aptiv AMEC 1P Adapter Pair

AD-1P-TE-MATEnet
TE MATEnet 1P Adapter Pair

AD-SMA-1P
SMA 1 Port Adapter Pair

AD-1P-Auto-E6S201
Rosenberger Automotive 1P Adapter Pair

AD-4P-Auto-E6S204
Rosenberger Automotive 4P Adapter Pair

TESTPRO-WH01-6G

AD-2P-Auto-E6S20B
Rosenberger Automotive 2P Adapter Pair

AD-6G-1P
6GHz Test Adapter

MMVNA-200
Mixed Mode
Multi-Port Vector
Network Analyzer

PRODUCT OVERVIEW

The MMVNA – 200 is a comprehensive, compact, customizable, and cost-effective tool for manufacturing or lab testing up to 3GHz. With numerous test fixtures for testing components such as raw cable, connectors, patch-cords, or cable harnesses MMVNA significantly reduces the effort in setting up test environment. Its powerful VNA Manager Pro software provides a wide range of S-parameter selections, unlimited plots, and traceable test reports. You can even configure secondary parameters such as ACR-F, capacitance, inductance, step or impulse response time domain plots, and more. MMVNA can also be easily integrated with the client's proprietary software via TCP/IP socket interface, or by using our commands interface.

The new K6GVNA-KIT provides similar functionality as MMVNA up to 6GHz. Working with handheld platform and 4-port test adapter, this unit provides full 4-port-S-parameter measurements up to 6GHz.

VNA MANAGER PRO CONTROL SOFTWARE

VNA Manager Pro runs on a PC connected to the MMVNA-200 and provides all configuration, control, data collection, data presentation and storage functions. This user-friendly software is versatile in enabling effective use of vast amount of S-parameter measurement data generated by the MMVNA.

- One Click Autotest makes it convenient for production environment.
- Configurable IP Address for MMVNA allows connecting of multiple MMVNA's to PC for integrated control.
- Command Line Interface support for integrating with Automated Test environment.
- Supports Single Ended & Dual Ended Test Configuration.
- Supports CSV and Touchstone export of Test Results.

Connector Test Fixtures
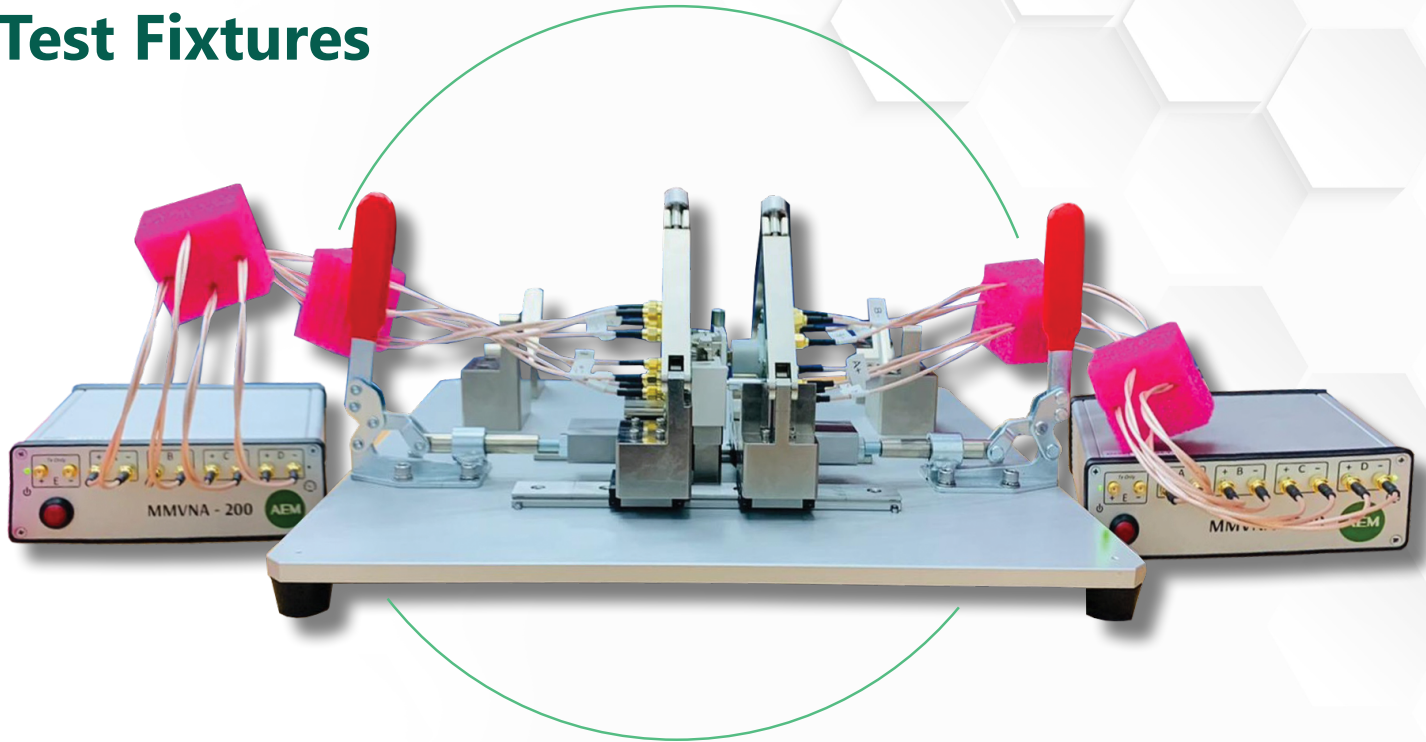
PRODUCT OVERVIEW

The Connector Test System (CTS) is a text fixture designed to be highly adaptable to any type of connector, through custom PCB fixtures. The fixture does not damage the connectors as some of these types of text fixtures commonly do, allowing users to achieve 100% test inspection. AEM has common fixtures readily available. Custom PCB boards are also available, contact us to discuss your needs at sales@aem-test.com.

The CTS relies on the MMVNA-200 and its companion software VNA Manger Pro to configure and run all required RF parameters.

TEST FUNCTION OVERVIEW

- Testing with a precise mechanical system
- Certifying connection hardware transmission performance
- No need to solder wires in RJ45 jack
- Minimizing influence due to manual operation
- Reducing test cost
- Ensuring test consistency and repeatability
- Supporting batch testing at product line

Raw Cable Test Fixtures

PRODUCT OVERVIEW

AEM's raw cable test fixture simplifies the testing of differential single-pair and multi-pair cables. With easy-to-attach connections, it provides accurate measurements of raw cables. The calibration plan can be defined right at the end of the DUT with use of calibration artifacts at the fixture's connector.

A pyramid version of raw cable test fixture is also available where high isolation between pairs is an important requirement.
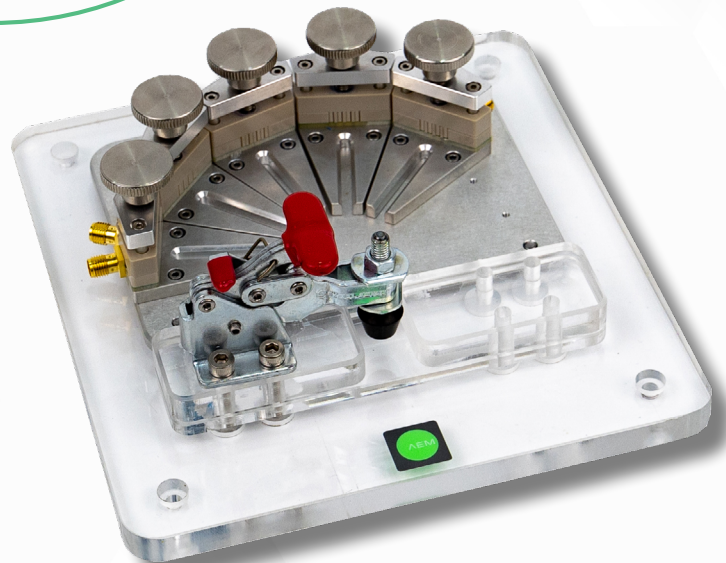
AHT-128
Cable Harness Tester

PRODUCT OVERVIEW

The Cable Harness Tester AHT-128 offers 128 test points of connectivity and resistance test. Multiple testers can be cascaded to test up to 1024 points. It is a compact and cost-effective PC controlled tool. Cable Harness Tester Manager PC software controls the AHT-128 units to perform testing, allows configuration and setting of test limits, and provides test reports.

The Cable Harness Tester not only tests resistance but also identifies open circuits, short circuits, crossed wires, mis–wires and pin–to–pin connectivity. It can also record all test results. The crucial data collected can be saved and uploaded to a PC for analysis. Users can clearly determine cable pin wiring easily and efficiently. Expandable and programmable, this Future-Ready tester will provide pass/fail check and diagnostics for countless applications.

PRODUCT FEATURES

Thorough Testing
Test for continuity, opens, and miswires, measurement of resistance

Easy to Learn
No advanced skills or training necessary to begin testing

Expandable
Up to 1024 points in increments of 128-points

Printing
Print to PDF functionailty is available

Test Program Customization
Customize test setup, labels and reports

Durable
Test thousands of cables without fear of equipment failure

Error Location
Detects error location (which end) for opens and shorts

Find defective,miswired, and intermittent cables instantly
Easily determine the type of error and locate it immediately

Fast Testing
Innovative technology and efficient algorithms reduce time spent on testing

Compact
Small, lightweight, and self-contained for easy mobility around the production floor

Orderable part numbers	
Part Number	**Description**
TESTPRO-WH-01E	TestPro Automotive Single ended SMA wire harness test kit
TESTPRO-WH-02E	Dual ended Wire Harness test system with SMA coax adapter set
TESTPRO-WH-01-6G	TestPro 6GHz test kit
MMVNA-200-K01	MMVNA-200 single unit
MMVNA-FX02-T80-PS	MMVNA toggle clamp fixture 80mm
MMVNA-FX04-RAWCBL	Test fixtures for raw cable testing
MMVNA-FX03-PYR	MMVNA pyramid fixture
AHT-128	Harness tester, low voltage, 128 ports
TestPro Adapters	
Part Number	**Description**
AD-1P-APTIV-AMEC	APTIV AMEC 1P Adapter Pair
AD-1P-Auto-E6S201	Rosenberger automotive 1P adapter pair
AD-2P-Auto-E6S20B	Rosenberger automotive 2P adapter pair
ADP-4P-Auto-E6S204	Rosenberger automotive 4P adapter pair
AD-1P-TE-MATEnet	TE MatEnet 1P adapter pair
AD-SMA-1P	SMA 1 port adapter pair
AD-6G-1P	6GHz Adapter, 1 Port