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**3M**

# Advanced Systems Tester 900AST



The internal wiring in aircraft is under constant bombardment from age, vibration and moisture – especially in airplanes that work 12 or more hours per day in widely varying conditions. With the 3M™ Advanced Systems Tester 900AST, the ability to quickly and accurately analyze avionics wiring problems reduces down time and minimizes the significant daily AOG (Aircraft On Ground) expense.



### **COMPREHENSIVE TESTING PLATFORM FOR AVIATION WIRING SYSTEMS**

The 900AST tester is a handheld, integrated test set designed specifically for locating faults (opens, shorts and intermittents) in the wiring of various transportation classes including that of most military, commercial and private aircraft.

With the 900AST tester, aviation mechanics can quickly locate faults and verify repairs on various conductor types utilizing the Resistive Fault Location

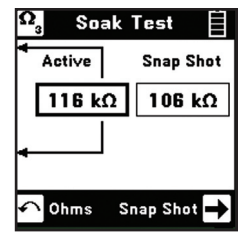
(RFL) and Time Domain Reflectometer (TDR) functions. In addition, the 900AST tester supports a full range of individual tests to categorize and sectionalize potential problems.

A key benefit of the new tester is the ability to display the distance to a fault in inches or centimeters.



3M™ Advanced Systems Tester 900AST

The 3M™ Advanced Systems Tester 900AST measures AC and DC voltage, conductor and insulation resistance with foreign voltage compensation capability, and capacitance. It can also conduct soak test measurements – extended period resistance measurements that can expose moisture or corrosion-induced faults – as well as a four-wire precision contact resistance measurement. This multi-functional test set can even simulate a load lamp and provide an interrupted ID tone for locating a particular wire. Coupled with its RFL and TDR functions, the 900AST tester is the total solution for avionics maintenance wiring problems.



Soak Test

## FULL-FEATURED PERFORMANCE SAVES TIME IN THE FIELD

The 900AST tester provides a wide selection of test functions to locate and sectionalize problems:

### FEATURES AND BENEFITS

<b>Voltage</b> – measures the level of DC or AC voltage	Eliminates the need for a separate digital multi-meter
<b>Load test</b> – measures the current flowing through a simulated internal load lamp	Eliminates the need for a separate load lamp to identify powered circuits
<b>Resistance</b> – measures conductor and insulation resistance with foreign voltage compensation capability	Eliminates the need for a separate digital multi-meter and the need to always deactivate power to measure resistance
<b>Soak test</b> – an extended-period resistance measurement that can expose moisture or corrosion-induced faults; the soak is usually performed between a conductor and shield/airframe ground	Exposes moisture and corrosion related faults
<b>Contact resistance</b> – a precision 4-wire resistance measurement for sub-ohm measurements	Eliminates the need for a separate resistance bridge
<b>Capacitance meter</b> – measures the capacitance of a component or circuit	Eliminates the need for a separate capacitance bridge
<b>ID tone</b> – applies an adjustable, interrupted AC signal for wire locating	Eliminates the need for a separate tone source for signal tracing
<b>Resistive Fault Location (RFL)</b> – precisely locates the distance to a resistive fault	Eliminates the guesswork in sectionalizing faults
<b>Time Domain Reflectometer (TDR)</b> – supports user-selectable pulse width, length setting, gain, velocity of propagation and noise filter	Displays a graphical representation of events on a circuit that can be used to identify faults and determine the distance to them in inches
<b>Auto TDR</b> - automatically analyzes a conductor or circuit for faults	Minimizes the requirement for manual trace analysis Automatically positions cursor and classifies most significant fault Recommends RFL if high resistance fault is present
<b>Toolbox Functions:</b>	
<b>Self-calibration</b> – maintains accuracy over time or with environmental change	No metrology calibration required
<b>Stored results</b> – permits viewing or uploading of stored test data	Records a history of test results for future comparison
<b>Special resistance</b> – measures the loop resistance and the resistance difference between two conductors in a pair	Detects imbalance between two conductors in a pair that can lead to noise problems
<b>Ohms to distance calculator</b>	Handy reference
<b>Units</b> - English and metric available	International applicability

## RUGGED, WEATHER-RESISTANT DESIGN

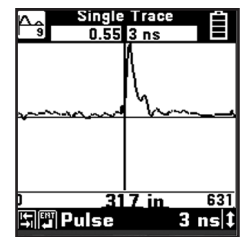
The handheld 3M™ Advanced Systems Tester 900AST is housed in a lightweight soft case for portability and ease of use. The unit is weather-resistant, durable and weighs only four pounds with test leads, batteries and soft case included. The protective soft case neatly stores the leads in a zippered pouch, and includes a convenient hook from which to hang the unit during testing.



3M™ Advanced Systems Tester 900AST Soft Case

## EASY TO USE

The 3M tester is designed for functionality and ease of use. Features include an infra-red communications port for uploading stored measurement results to a PC. A large, backlit, black and white LCD display (2.6 x 2.6 in., 192 x 192 pixel resolution) provides flexibility for a graphical user interface and a user-friendly, icon-based display of test results. If there is ever a question during operation, the new tester has a built-in internal help menu to provide you with the information you need to get back on track.



Time Domain Reflectometer Single Trace

## PHYSICAL SPECIFICATIONS

<b>Weight</b>	3.0 lbs (4.0 pounds with batteries, test leads and soft case)
<b>Size</b>	4.6 x 10.3 x 3.3 in

## ENVIRONMENTAL SPECIFICATIONS

<b>Operating temperature</b>	0° to 140° F (-18 to 60° C)
<b>Storage temperature</b>	-40° to 165° F (-40 to 75° C)
<b>Humidity</b>	0-95%, non-condensing

## ACCESSORIES

Five (5) 5 ft. test leads with 2 mm gold-plated banana plugs at the test set and standard chrome-plated banana plugs on the other end (red/black, green, blue/yellow)
Two (2) impedance-matched coaxial test leads for the TDR function with 2 mm gold-plated banana plugs at the test set and BNC connectors on the other end
Alkaline battery holder
Rugged nylon soft case
Operating manual

## GENERAL SPECIFICATIONS

<b>Drop test</b>	Survives a 5 ft. drop onto concrete in soft case, using ASTM D4169 Assurance Level I Method 5276
<b>EMC Standards</b>	Meets EN 61326-1:A1:1998 and A2:2001 Class B (radiated emissions); EN61000-4-2:1995 (electrostatic discharge); and EN 61000-4-3:1995 (radiated immunity)
<b>Vibration</b>	Meets MIL-STD-810F, Method 514.5
<b>Water, dust and chemicals</b>	Meets IP64 per IEC 529(1989) for rain and dust; meets immersion test IP67 to 0.15 m deep
<b>Explosive atmosphere</b>	Meets MIL-STD-810F, Method 511.4, Procedure I
<b>Batteries</b>	Requires six AA alkaline cells
<b>Battery life</b>	22 hours typical use (measuring voltage, 50/50 on/off, no backlight)
<b>Soft case</b>	Industrial grade nylon with plastic hanging hook provides test lead and accessory storage

Built to ISO9001/2000 certification for manufacturing facilities. Built to ANSI/IPC A610-C manufacturing standards.

## ELECTRONIC SPECIFICATIONS

FUNCTIONS	RANGE	RESOLUTION	ACCURACY
<b>Voltage (DC)</b>	0 to 99.9 V 100 to 300 V	0.1 V 1 V	1% ± 0.5 V 3%
<b>Voltage (AC) 50 Hz - 440 Hz</b>	0 to 99.9 V 100 to 250 V	0.1 V 1 V	1% ± 0.5 V 3%
<b>Ohms (Resistance)*</b> With foreign voltage present	0 to 9,999 ohms 0 to 9,999 ohms 10 k to 99.9 k ohms 100 k to 999 k ohms 1 M to 9.9 M ohms 10 M to 99 M ohms 100 M to 990 M ohms	1 ohm 1 ohm 0.1 k ohm 1 k ohm 10 k ohm 0.1 M ohm 1 M ohm	1% ± 5 ohms 1% ± 50 ohms 1% 3% 3% 5% 10%
<b>Contact resistance*</b>	0 to 5 ohms	0.001 ohm	1% +/- .05 ohm
<b>Special resistance*</b>	0 to 25 ohms	0.01 ohm	1% ± .05 ohm
<b>Capacitance</b>	10 nF to 9.9 uF	1 nF	10%
<b>ID tone</b>	200 to 1,000 Hz, fixed level, interrupted	1 Hz	± 1 Hz
<b>RFL*</b> Fault range Resistance to fault Resistance to strap	0 to 500 k ohms 0 to 15 ohms 0 to 15 ohms	0.001 ohm 0.001 ohm	1% +/- .05 ohm 1% ± .05 ohm
<b>TDR**</b> Pulse width Ranges (nominal, specified for twisted pair with Vp of 0.68) Velocity of propagation Modes	3 ns, 5 ns, 34 ns 192", 384", 624", 1320", 2640", 3840", 5760", 15360" 0.10 to 0.99 Single, Dual, Differential, Crosstalk, Memory, Peak	Fixed values  0.01	2% of range

All percentage accuracy measurements are based on the reading unless otherwise specified.

\*Measurement applies current-limited (< 1 mA) 80 V stimulus

\*\*Measurement applies pulse amplitude of approximately 60 V peak

## ORDERING INFORMATION

To order, call 1-800-426-8688. For more information, please contact your local 3M representative.



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