

BASEWEST

Operating Manual

Model TS-421 Test Set

Escape Slide Lighting Systems

PRELIMINARY RELEASE

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1.0 General

1.1 Introduction

The Model TS-421 test set is a rechargeable, handheld instrument designed specifically for testing airline escape slide lighting batteries and light harnesses. The configuration comprises a molded plastic enclosure with touchscreen, a removable protective cover with stand, and a universal charger. This instrument may be used interchangeably with the original TS-420 test set and the Astronics Model TU-14.



TS-421 Test Set

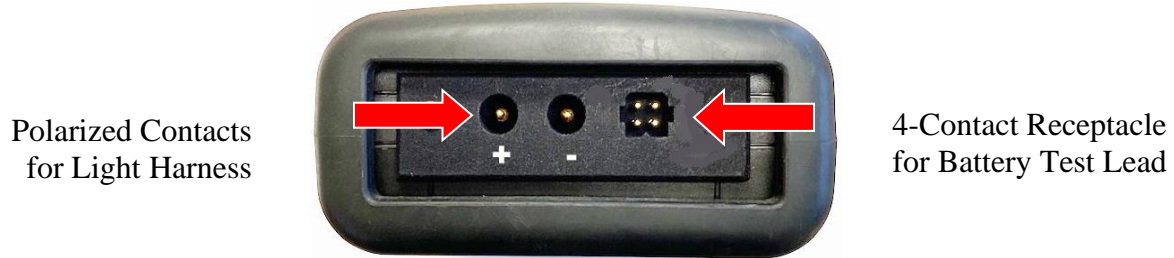
1.2 Function

The Model TS-421 provides the following functions:

- Voltmeter with built-in load bank – The Voltmeter Mode is used to test battery condition. A touchscreen interface provides for the selection of established resistive loads as well as an open circuit (no load) test.
- Ammeter with regulated power supply – The Ammeter Mode is used to verify the electrical current draw of the slide light harness when powered by the test set's regulated 5 VDC power supply. The ammeter test verifies proper function of the light harness luminaires. The ammeter test has a built-in timer that allows a hands-free, walk-around inspection of luminaire operation for 30 seconds. The internal power supply is capable of providing up to 3 amperes of current.

1.3 Test Connections

Test connections are made at the connector block on the top of the instrument, shown below. These connections include a 4-contact receptacle to mate with the test lead of the battery or battery/harness system and two polarized receptacles to test individual lighting harnesses.

**Test Connections / Connector Block**

1.4 Test Set Activation

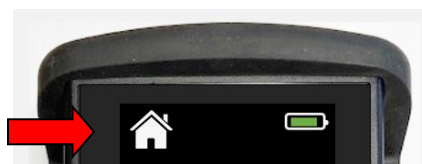
The TS-421 is OFF when the screen is dark and the RED press-to-test button is not illuminated as shown in the image to the left, below. Test set activation is accomplished by either tapping the touchscreen or pressing the RED button. The test set is activated and ready for testing when the HOME screen, below middle, is illuminated.

**Inactive / OFF****HOME Screen****Charging Required**

If the internal battery is not sufficiently charged for test set operation, the screen to the right, above will appear for 3 seconds, indicating that recharging is required.

1.5 Home Icon

The HOME screen, above, re-appears at any time the home icon is touched during subsequent testing. An example is shown below on a representative screen.

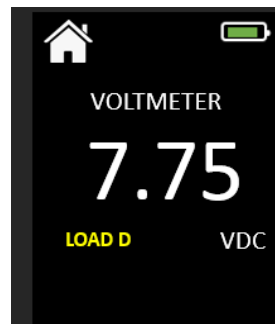
**Home Icon**

1.6 Internal Battery Status

The charge status of the internal battery is monitored and read-out upon activation of the test set and whenever the touchscreen is active. A battery status icon is displayed in the top righthand corner of the screen indicating state of charge. When the internal battery voltage reaches a predetermined level, the icon will change from Green to Yellow indicating that the unit should be recharged before next usage.



Half Charge (Yellow)



Full Charge (Green)

1.7 Recharging

Recharging of the internal NiMH internal battery is accomplished by a 120/220 VAC charger provided with the instrument. Chargers provided with the earlier TS-420 test set may be used. The recharging port is located at the lower right-hand side of the test set.

1.8 Display Timing

Voltmeter and ammeter test readings remain bright for 15 seconds, then dim for an additional 15 seconds to conserve power. The screen goes dark after 30 seconds, and the RED button begins to blink. The last reading is retained and recoverable so long as the RED button remains blinking (about 60 seconds). During this time the last reading can be recovered by touching the touchscreen or pressing the RED button.

1.9 Automatic Time-Outs

If the test set is left ON and unattended for 90 seconds, the unit will automatically turn OFF and the last reading is erased. The unit can be turned OFF by returning to the Home screen and pressing the RED button.

2.0 **Voltmeter Mode (Battery Testing)**

2.1 Connect the slide light battery's 4-contact test lead to the mating receptacle on the connector block. Note that the connector is keyed for proper alignment.

2.3 Tap the VOLTMETER icon on the HOME screen. The RED button illuminates and the load selection screen, below, appears. The resistive load specified by the slide manufacturers CMM is selected by scrolling through the loads via the left/right arrows.



Select Voltmeter

Select Load

NOTE: If the battery to be tested is not connected, or connected improperly, the test creates a quick three-pulse vibration, and a screen prompt “Connect Battery” appears indicating that battery connection is required.

2.4 Press the RED button. A loading icon appears momentarily until the voltage reading appears.



Press to Test

Test In Process

Voltage Reading

2.5 Display timing and test reading availability is covered in Section 1.8.

3.0 Ammeter Mode (Light Harness Testing)

3.1 Connect a light harness to the test set as follows:

- If testing an individual light harness - Connect light harness directly to two polarized receptacles with pins in the connector block. Be sure to observe polarity; in most cases the BLUE wire is positive (+) and the WHITE wire is negative (-).
- If testing a connected battery and light harness system - Connect the 4-contact test lead of the battery connected to the light harness to the mating 4-contact receptacle on the connector block.

3.2 Tap the AMMETER icon on the HOME screen.

NOTE: If the light harness to be tested is not connected, or connected improperly, the test set creates a quick three-pulse vibration, and a screen prompt “Connect System” appears.

3.3 Press the RED button. A loading icon appears for 3 seconds until the ammeter reading appears.



Select Ammeter Mode

Test In Process

Ammeter Reading

3.4 The connected lighting harness will remain illuminated for 30 seconds, allowing the test operator to walk-around, hands free, to verify that all luminaires are operating.

3.5 Display timing and test reading availability is covered in Section 1.8.

4.0 Care & Maintenance

- 4.1 The TS-421 test set is a sensitive electronic instrument; it should be treated and protected with appropriate care. Damage from obvious abuse cannot be covered by warranty.
- Be particularly careful to protect the touchscreen from any physical damage (damage to the touchscreen is not covered by warranty)
 - The case is not completely sealed; keep away from rain, spills, and fluids to prevent damage to internal electronics
 - Do not apply external electrical inputs, except AC charger
 - Protect from extreme temperatures and humidity; it is best to store the instrument in temperature-controlled spaces
 - It is recommended to keep the protective cover in place at all times
 - Avoid excessive exposure to sunlight and UV
- 4.2 Maintenance is limited to wiping the unit enclosure and touchscreen down lightly with a clean cloth moistened with alcohol. DO NOT use cleaners or solvents.
- 4.3 Field repairs except battery replacement are not authorized and will void warranty.
- 4.4 The P/N 6-1036 NiMH rechargeable battery is rated at a nominal 5-year life. Battery replacement, when required, is accomplished as follows:
- Remove protective cover
 - Remove back panel of the test set enclosure; retain 4 attach screws.
Note: the removable battery pack is nested in the back panel.
 - Disconnect battery pack connection
 - Remove battery pack carefully (Velcro attachment)
 - Install new battery pack in the same location and orientation
 - Reconnect battery
 - Reinstall back panel and nested battery pack with four attach screws

5.0 Calibration

A separate BaseWest calibration manual, 25-60-46, is provided with each new unit. Calibration is recommended on one-year cycles but is dependent on user requirements. Calibration can be accomplished without opening the test set body.