# Digital Battery Element Tester

## Pulse Surge Arc Testing of Lead-Acid Batteries


# Model 1657

## Key Benefits

- Improve product quality and customer satisfaction
- Short test times to support high volume production test
- Simple user interface for ease of operation and reduced training cost
- Large, easy to read color LCD with white LED backlight and audible alarm provides clear Pass/Fail indications
- Remote computer interfaces for data collection for statistical process control
- Detachable safety probes ensure operator safety and easy replacement as needed
- Form and fit compatible with STS 1652 Model
- Bench Model. See STS 1656 for Rack mountable version

CE

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# Digital Battery Element Tester — Model 1657

## Tester Description

The STS Instruments 1657 Battery Element Tester provides a unique method for the detection of assembly level insulation defects in lead-acid batteries, including missing and damaged separators. Detection of such faults prior to filling and charging the battery minimizes costly reclamation.

## Important Benefits

Increase your product quality and reliability by rigorous in-line high voltage testing of your battery element separator plates during the production process. Reduce field failures, costly recalls and dissatisfied customers by adding the 1657 Battery Element Tester to your Lead Acid Battery production line.

Hidden imperfections in your separator plates are difficult to detect using conventional means. When using traditional AC hi-pot testing to detect such failures, excessive heating can occur in moist cell applications resulting in possible damage of the unit under test.

The 1657 uses a unique short-duration high voltage pulse instead which maximizes stress on the dielectric material for fault detection but induces minimal energy.

## Advanced Technology

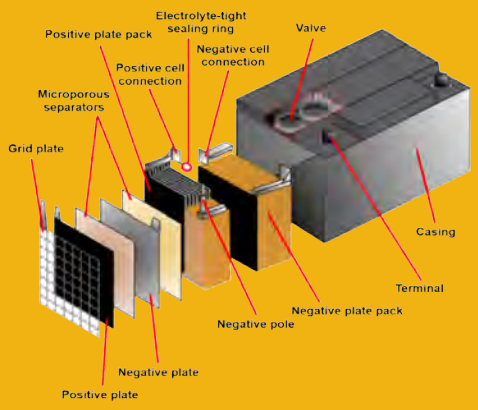
The Model 1657 tester uses modern digital technology to obtain new levels of accuracy and fault detection compared to previous generation, analog battery element testers. Sporting an easy to read full color display and simple menu driven user interface, the 1657 represents a significant step forward in ease of use.

The 1657 offers fully adjustable test voltage with a peak output capability of 3000 volts, accommodating a wide range of separator spacings and types. Durable solid state switching of the high voltage output assures reliability for high volume applications.

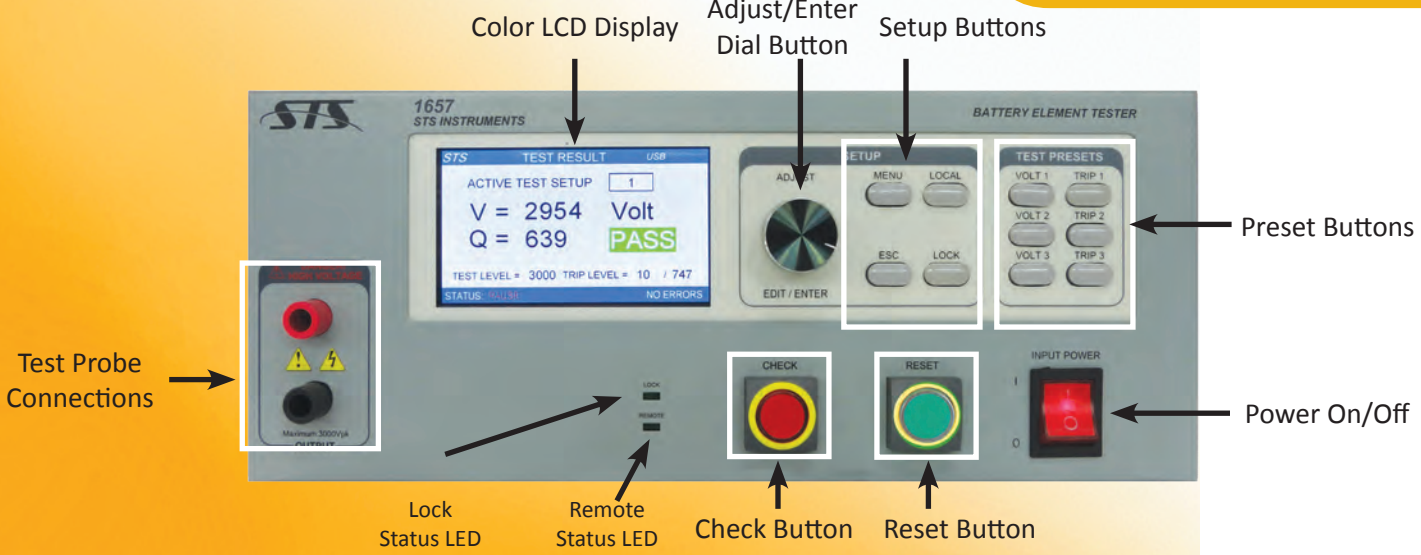
Easy-to-read readouts for applied test voltage and quality reading make this unit very operator friendly, requiring minimal training and setup. Operation is go/no-go, and requires no operator interpretation of results. The test voltage is applied using included safety probes. When a failure occurs, the high voltage is shut off and both audible and visual alarms warn the operator of any failure.

## APPLICATIONS

- **Automotive Engine Starting, Lighting and Ignition Batteries (SLI)**
- **Power Backup and Energy Storage System Batteries**
- **Traction Application Batteries**
- **Most Battery Types with Separators**




## Easy Front Panel Operation

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## Technical Specifications

### OUTPUT VOLTAGE

| | |
|---|---|
| RANGE | 300 to 3000 Volts |
| RESOLUTION | 10 V |
| ACCURACY | ± 2.0% |
| SHAPE | Pulse |
| DURATION | 120 µsec typ. |
| TEST INTERVAL | Programmable from 30 msec to 5000 msec |

### MEASUREMENTS (ALL DIGITAL)

| | |
|---|---|
| VOLTAGE | Range: 0 to 3000 Volts Peak |
| | Resolution: 1 Volt |
| | Accuracy: ± 2.0% F.S. |
| QUALITY METER | Range: 10 to 3750 |
| | Resolution: 1 |
| | Accuracy: ± 2.0% |

### AC INPUT

| | |
|---|---|
| INPUT VOLTAGE | 100V to 240V ± 10 % Universal Input, 47 – 63 Hz |
| CURRENT | 500 mA Max. |
| POWER FACTOR | 0.98 Typical |
| FUSE | 0.5A Slow Blow 250VAC. |
| | Fuse Dimension: 5 x 20 mm / 0.20" x 0.80" |
| LINE CORD | Detachable, IEC 60320, C13 Type (Line Cord Included) |

### ENVIRONMENTAL

| | |
|---|---|
| TEMPERATURE (Operating) | 0 to +40° C<br>+32 to +104° F |
| TEMPERATURE (Storage) | -20 to +70° C<br>-2 to +158° F |
| HUMIDITY | RH 5 to 95%, Non-Condensing |
| ALTITUDE | 2000 m / 6000 ft. |
| POLLUTION DEG. | Cat II, Indoor Use |

### REMOTE CONTROL

| | |
|---|---|
| USB (standard) | USB: 2.0, Type B Connector, Rear Panel |
| RS232 (option)[1] | DB9 Connector, Rear Panel |
| RS485 (option)[1] | DB9 Connector, Rear Panel |
| PLC I/O (option) | Digital I/O, D-Sub 15 pin connector, Rear Panel |

### REGULATORY

| | |
|---|---|
| APPROVALS | CE Mark LVD 2006/95/EC |
| | Safety: IEC 61010-1:2010, Ed 3.0 |
| | EMC: IEC 61326-1:2013, Ed. 2.0 |

*Note 1: Options -232 and -485 are mutually exclusive. Only one of these can be specified on order.*

### FRONT PANEL CONTROLS AND INDICATORS

| | |
|---|---|
| POWER | Illuminated On/Off Rocker Power Switch<br>Lit when unit is powered on |
| CHECK | Red Illuminated Check Button Verifies Tester Operation |
| RESET | Green Illuminated Reset Button |
| ADJUST / ENTER DIAL | Allows for Easy Scrolling through on Screen Menu Fields and Adjustment of Parameters and Test Levels |
| LCD DISPLAY | 480 x 272 Pixel High Resolution Graphical Color LCD with white LED Backlit, 4.2" Diagonal Size |
| KEYS | MENU: Displays Main Menu |
| | LOCAL: Returns Front Panel Control |
| | ESC: Backs up or Undo Last Entry |
| | LOCK: Locks out Front Panel Control |
| | VOLT1 to VOLT3: Selects Preset Test Level |
| | TRIP1 to TRIP3: Sets Preset Trip Level |
| TERMINALS | Range: 0 – 3000 V<br>Safety Rated: 6000V max. |
| TEST PROBES | High Voltage Detachable Probes with Leads |
| | Safety Retractable Probe Tips |
| | Easily Replaceable after Wear |

### PHYSICAL

| | |
|---|---|
| FORM FACTOR | Bench Top Format, Steel Chassis |
| DIMENSIONS[2] | Width: 340 mm / 13.4" |
| | Height: 140 mm / 5.5" |
| | Depth: 336 mm / 13.2" |
| | Shipping: 470 x 275 x 497 mm<br>18.5" x 10.8" x 19.6" |
| WEIGHT | Net: 6.7 Kg / 14.8 lbs. |
| | Shipping: 8.2 Kg / 18 lbs. |

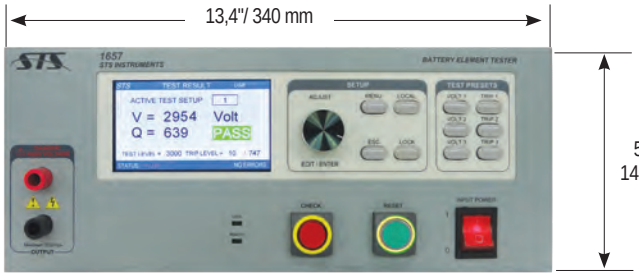
### FEATURE COMPARISON 1652 VERSUS 1657

| Feature | 1652 | 1657 |
|---|---|---|
| Test for SHORTS | YES | YES |
| Test for OPENS | NO | YES |
| Front Panel Setups | NO | YES |
| Large Color LCD Display | NO | YES |
| Remote Control Interfaces | NO | USB, RS232, RS485 |
| Programmable Test Time | NO | YES |
| Calibration Reminder | NO | YES |
| PLC Interface | NO | YES |

*Note 2: For 19" rack mount requirements, refer to the STS1656 data sheet or contact factory for details.*

# Digital Battery Element Tester — Model 1657

## Front and Rear Panel Layout and Connectors




*The STS 1657 is designed for bench top use.*


*The STS 1657 Rear Panel provides connections for AC Input, USB interface, PLC I/O and RS232 interface option.*

## Ordering Information

| MODEL NUMBER | DESCRIPTION | NOTES |
|---|---|---|
| 1657 | Battery Element Tester | Supplied with:<br>• USB Interface<br>• Set of High Voltage Safety Test Leads, 1.8 m / 6 ft. long<br>• 1657 Operator Manual and Owners Manual<br>• Spare AC Input Fuses (2)<br>• Certificate of Calibration<br>• AC Line Cord (detachable) |
| **OPTIONS** | **DESCRIPTION** | **NOTES** |
| -232 | RS232 Serial Interface | Remote control interface |
| -485 | RS485 Serial Interface | Remote control interface, multi-drop |
| -PLC | PLC I/O Interface | Digital Input/Output Controls |
| -RPC | Rear Panel Connections | Provides rear panel mounted test probe connections |
| **ACCESSORIES (P/N)** | **DESCRIPTION** | **NOTES** |
| 102-050-919 | Test Probe Assembly Kit | Set of Safety Retracting Red & Black Probes with 1.8 m /6 ft. leads |
| 200025 | Test Probe Assembly, Red | Safety Retracting Probe, Red with 1.8 m / 6 ft. lead |
| 200026 | Test Probe Assembly, Black | Safety Retracting Probe, Black with 1.8 m / 6 ft. lead |
| 200386 | Test Probe Assembly, Red | Safety Retracting Probe, Red with 3 m / 10 ft. lead |
| 200387 | Test Probe Assembly, Black | Safety Retracting Probe, Black with 3 m / 10 ft. lead |

## Service and Support

STS Instruments' customer support is second to none. Our Customer Support Program provides the training, repair, calibration, and technical support services that our customers value. So, in addition to receiving the right test equipment, our customers can also count on excellent support before, during and after the sale. Warranty Period: One year. Complete calibration and repair services are offered at our USA, United kingdom and China manufacturing facilities (see contact info below). Calibrations are to original factory specifications and are traceable to NIST (National Institute of Standards and Technology). A certificate of conformance accompanies each repaired tester.

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