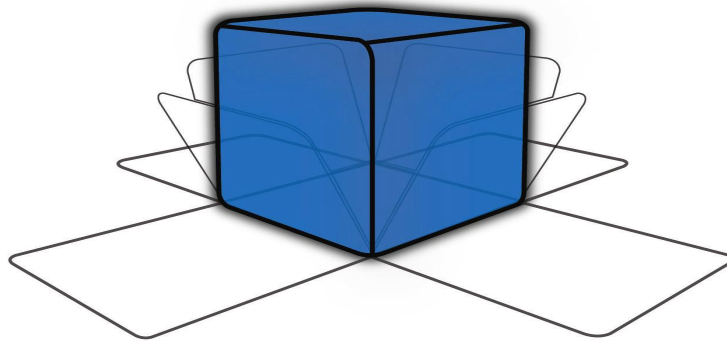


# MegaPulse

## Antenna Surge Impulse Tester

Instruction Manual



***COMPLIANCE WEST***<sub>USA</sub>

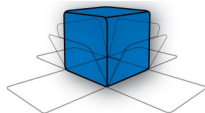


*Dear Customer:*

*Congratulations! Compliance West USA is proud to present you with your MegaPulse Antenna Surge Impulse Tester. Your instrument features a groundbreaking logic-controlled circuit design and ergonomic front panel and represents the latest in high voltage impulse testing.*

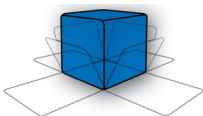
*To fully appreciate all the features of your new instrument, we suggest that you take a few moments to review this manual. Compliance West USA stands by your instrument with a full one-year warranty. If the need arises, please don't hesitate to call on us.*

*Thank you for your trust and confidence.*



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# Section 1

## An Introduction to Impulse Testing with the MegaPulse series tester

The impulse test is designed to simulate impulse surges which occur in everyday life due to nearby lightning strikes, switching transients, and other high-frequency faults on the power distribution network. Impulse testing is the fundamental method for empirical verification of the adequacy of insulation. Other methods of ensuring adequate insulation (AC or DC Dielectric Withstand testing, measurement of over-surface creepage, through-air clearance, or distance-through-insulation) are all extrapolated from the results of impulse testing. The impulse test is performed to ensure that the insulation in question will be able to function properly when subjected to similar impulse surges in the field.

### Safety Precautions

The impulse withstand test can generate voltages in excess of 10000 V peak at potentially lethal current levels. Currents of as little as 5 mA at 120 volts can cause death; the MegaPulse can deliver currents of more than 100 Amps peak for a very short time duration. The potential for serious injury or death exists and personnel should be aware when they conduct this test.

### Test Personnel

Personnel require special training to conduct the impulse test. They should understand electrical fundamentals clearly, and be aware that high voltage is adept and creative at completing a path to ground. Instructions should include a warning against any metal jewelry. Operators should not allow others in the testing area, especially when tests are being conducted. Organization is to be stressed. The operator should keep the area free of unused leads and equipment.

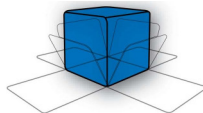
### Testing Area

The area used for conducting the impulse test should be as remote as possible from normal production line activities. Only personnel actually conducting the test should be allowed in the area, and it should be taped or roped off to preclude casual entry by other employees. In addition, the area should be marked "WARNING - HIGH VOLTAGE TESTING" or the equivalent to warn others of the nature of the testing taking place.

The bench being used should be non-conductive, and any exposed metal parts should be tied together and grounded. If a conductive surface must be used, it should be grounded.

Because of sparking during an impulse test failure, it is not safe to conduct impulse testing in combustible atmospheres.

It is imperative that a good ground be provided to the MegaPulse tester. Before connecting the equipment, ensure that the building wiring provides a low-resistance ground. If the MegaPulse tester is used on a high-resistance grounding circuit, dangerous high voltages may be present to the operator. In addition, the power to the Testing Area should be provided with an easily reached shutoff switch which can be actuated by personnel outside the Area if needed.



## Safety Techniques

The high voltage circuit of the MegaPulse can be shut off at any time by turning OFF the rear power switch. Note that there are residual voltages inside the equipment that may take up to 5 minutes to bleed off to safe levels.

The MegaPulse tester is provided with a **VOLTAGE ADJUST** knob on the front panel. This should always be adjusted fully counterclockwise to the minimum position at the start of testing. In addition, this knob should be adjusted back to the minimum position at the completion of all testing.

The MegaPulse tester is provided with a **CHARGE** switch that is in the unarmed "Standby" setting when the tester is first turned ON. When the yellow **CHARGE** button is lit, the tester will not provide high voltage until the **CHARGE** Button and the **TRIGGER** Button have been pressed in order. To prevent inadvertent operation, the operator should be instructed not to press the **CHARGE** Button until the test is ready.

The MegaPulse tester has been designed for one-touch operation with the right hand. If possible, it should be set up to the left and in front of the equipment under test. The equipment under test should be connected to the MegaPulse tester and then left alone by the operator. After the operator is clear of the Tester and the equipment under test, the operator should turn the rear-panel power switch to ON, press the **CHARGE** Button, adjust the voltage to the desired level (as displayed on the front panel meter), then press the **TRIGGER** Button, with his right hand. This will allow the greatest separation between the operator and the test being conducted.

The MegaPulse tester is designed to bleed the high voltage away after the test has concluded. In order to ensure that any voltage present in the equipment being tested has been completely bled away, the operator should not unplug the equipment under test from the MegaPulse until the front panel meter reads a safe level (40 volts or less is generally considered a safe level). Pressing the **TRIGGER** button before disconnecting main power (or turning the equipment off) will ensure that the internal capacitors are discharged as much as possible.

## Using the MegaPulse Impulse Tester

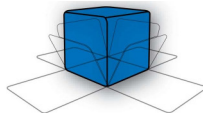
The impulse withstand test involves high voltage and caution should be exercised when using the Tester. The **RETURN** lead is referenced to building ground when properly connected. However, both the **OUTPUT** and **RETURN** leads must always be treated as Hazardous whenever the power switch of the MegaPulse is in the ON position.

The MegaPulse impulse tester generates the impulse waveform only; it does not determine Passing or Failing results. It is Operator's responsibility to monitor the output waveform and determine Passing or Failing results. In monitoring the impulse waveform, consider the following points:

The Impulse waveform is high voltage, and high frequency (short duration). Always ensure that the measuring instrument (usually an oscilloscope with a high-voltage probe) is rated for the voltage involved, and that the frequency response of the instrument and probe are capable of measuring the output waveform of the MegaPulse Impulse Tester. A measuring instrument or probe with a low frequency response will result in erroneous readings that could be mis-read.

The MegaPulse Antenna Surge does not have a **POLARITY** switch on the front panel.

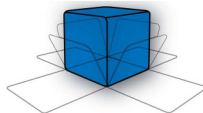
Note that the Voltage meter may indicate that some residual voltage is present on the main storage capacitor, even when the tester is first turned ON. This is due to inherent charging



of the internal capacitors. Pressing the **TRIGGER** switch will discharge the capacitors (be sure not to touch the output and return leads when pressing the trigger switch).

Determination of Passing and Failing results can prove difficult. To obtain the most accurate results, it is generally necessary to perform multiple impulse tests on a few different test samples (that have adequate insulation to pass the impulse test). Take note of the impulse waveshape, amplitude, and duration. Also note how much variance there is in the waveshape from test to test. Also (if possible), perform impulse testing on some test samples that are known to have inadequate (or damaged) insulation. Take note of the impulse waveshape, amplitude, and duration, when an insulation breakdown occurs.

It is possible to perform simultaneous testing on multiple test samples. In order to accurately determine Passing and Failing test results, it is generally necessary to perform multiple tests with a single (failing) sample connected along with multiple “passing” samples. Make sure that it is always possible to distinguish a group of tests samples that are all “passing” from a group with a single “failing” sample.



## Section 2

### Introduction and Specifications

#### Introduction

This manual contains complete operating, maintenance and calibration instructions for the Compliance West USA MegaPulse Antenna Surge Impulse Tester.

- In case of trouble, the test can be immediately terminated at any time by turning the rear-panel power switch to the OFF position.
- Before the test can commence, the unit must be armed by pressing the **CHARGE** Button. The test will not begin until the **TRIGGER** Button is pushed.
- Operator instructions are printed on the rear panel for quick reference.
- Voltage is discharged by a resistor bank within the MegaPulse tester upon test completion. Discharge progress is shown on the front panel meter.

Your Tester is warranted for a period of one year upon shipment of the instrument to the original purchaser.

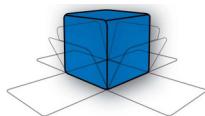
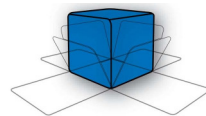
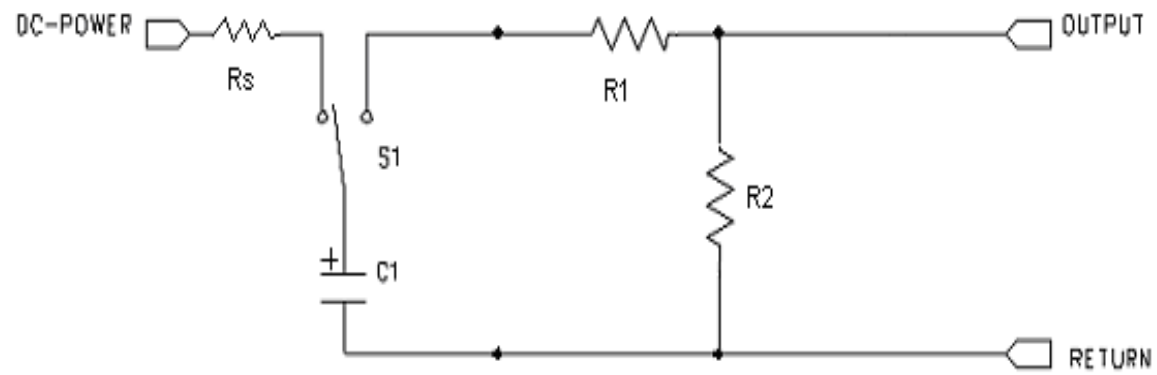




Figure 1.

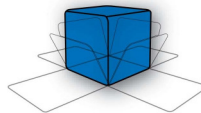


Model	Waveform	Max. Voltage	Rs	C1	R1	R2	R3
Antenna Surge	Not defined	10000V	15M ohm	1 nF	1 kOhm	4M (optional)	-

Specifications for the MegaPulse Antenna Surge are listed in Table 1. Component designations referenced in Table 1 are as shown in Figure 1.

Meter Accuracy: +/- 3%	Environmental: 15-40°C operating temperature 0-90% Relative Humidity, non-condensing	Electrical: Input Voltage: 120 V, 50-60 Hz Input Current: 1 - 2 A (220-240V option available)	Mechanical: Weight: Approx. 45 lbs. Dimensions: 17"W x 17"D x 1"H
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**Table 1. MegaPulse series specifications**



## Section 3

### Operation

This section describes how to set up and make measurements with your Tester. We recommend that you read the entire section carefully so that you can use all of the features of your Tester.

#### Setting up your Tester

Your Tester is shipped in a special protective container that should prevent damage to the instrument during shipping. Check the shipping order against the contents of the container and report any damage or short shipment to Compliance West USA. The container should include the following:

- The MegaPulse Impulse Tester
- Two high-voltage test leads
- An 18 AWG Line Power Cord
- This Instruction Manual

If reshipment of the instrument is necessary, please use the original shipping container. If the original shipping container is not available, be sure that adequate protection is provided to prevent damage during shipment. We recommend that the instrument be surrounded by at least two inches of shock-absorbing material on all sides of the container.

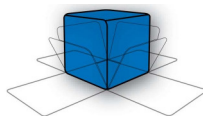
Remove the Tester from its container and place it on a test bench.

#### AC Line Voltage Requirements

AC line voltage requirements for your Tester are noted on the rear panel of the instrument. Do not connect the instrument to a different voltage source.

#### Selection of a Suitable Power Cord

The cord packaged with your MegaPulse Tester is for use in the United States. If another power cord must be used, the cord must be rated for the maximum current noted on the rear panel. It must also meet the requirements of IEC 227 or IEC 245, and mains cords that are certified or approved by any recognized national test house are regarded as meeting this requirement.



## Fuse Replacement

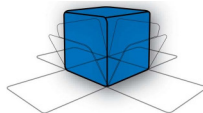
There is a user-replaceable fuse (F1) located on the rear panel of the instrument. It is located behind a door in the Power Inlet-Power Switch-Fuse Holder device. The fuse rating is noted on the rear panel. Do not attempt to replace it with a fuse of any other rating.

Use the following procedure to replace the fuse F1:

1. Turn the power switch to the O or off position.
2. Unplug the instrument from the source of supply.
3. Remove the power inlet cord from the instrument.
4. Using a small screwdriver, pry open the fuse holder door.
5. Replace the fuse with a new one of the correct rating.
6. Replace the fuse holder door and power inlet cord.

## Front and Rear Panel Features

Before using your Tester, take a few minutes to become familiar with the use of its controls, indicators and connectors. The front panel features of the MegaPulse are shown in Figure 2 and described in Table 2. The rear panel features of the MegaPulse are shown in Figure 3 and described in Table 3.



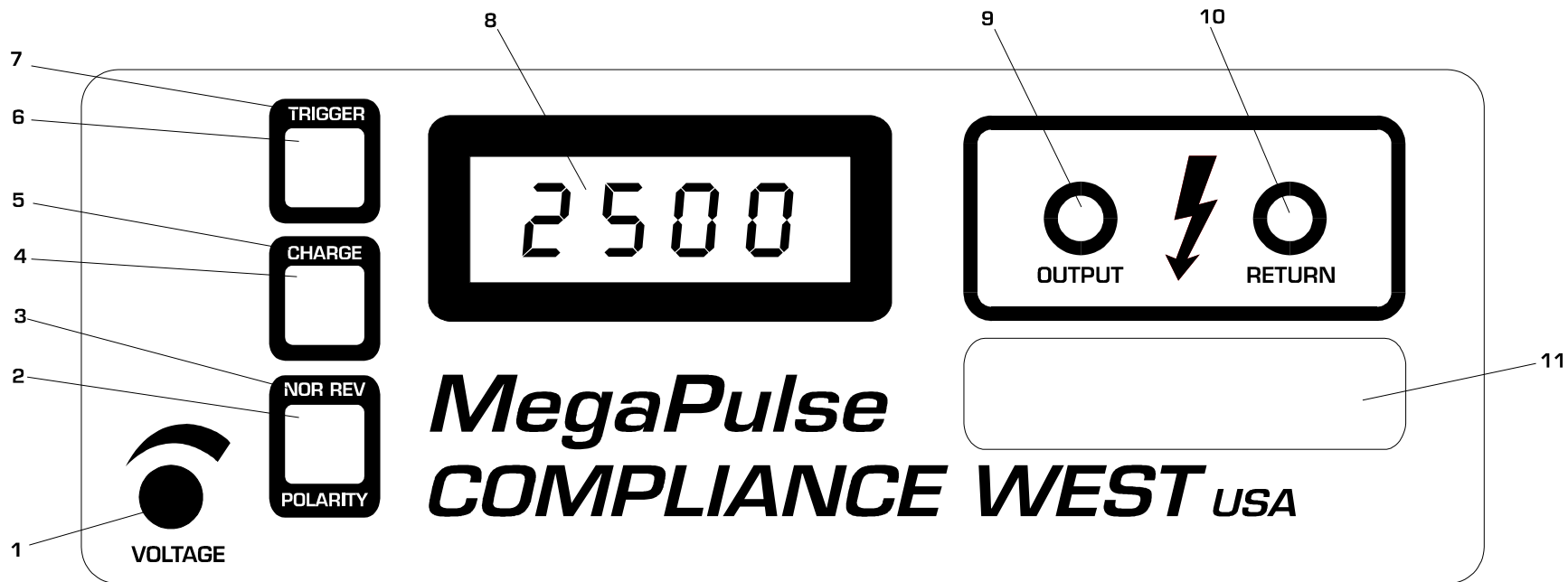
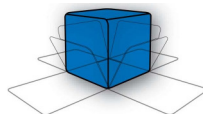
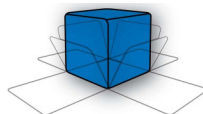


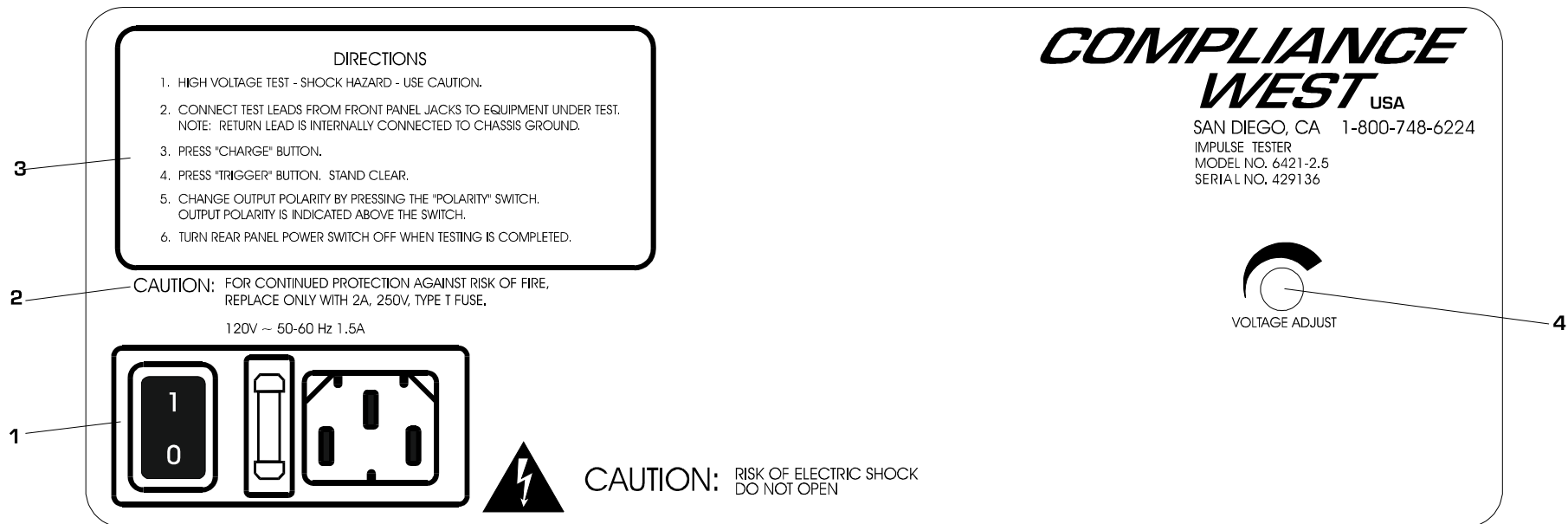
Figure 2. Controls, Indicators, Connectors – MegaPulse series Front Panel



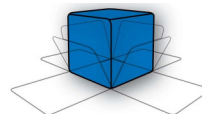
ITEM	NAME	FUNCTION
1	<b>VOLTAGE</b> Adjust Knob	Turn Clockwise to increase the output voltage after the <b>CHARGE</b> button has been pressed. Turn the knob fully counterclockwise (lowest voltage setting) before the start of each test, and after the end of each test.
2	<b>POLARITY</b> switch	This switch is not active on the MegaPulse Antenna Surge.
3	<b>NOR REV</b> indicator	The polarity will always be in the Normal ( <b>NOR</b> ) position on the MegaPulse Antenna Surge.
4	<b>CHARGE</b> switch	Press this switch to begin charging the impulse storage capacitor (C1 in Figure 1). The <b>CHARGE</b> indicator will turn off after the <b>CHARGE</b> switch is pressed, and the <b>TRIGGER</b> indicator will turn on. The voltage on the capacitor will appear on the LED Display, Item 8. This voltage will appear across the output leads when the <b>TRIGGER</b> switch is pressed. Note that the <b>POLARITY</b> switch is prevented from operating after the <b>CHARGE</b> switch has been pressed.
5	<b>CHARGE</b> indicator	This Yellow indicator is lit to show that pressing the <b>CHARGE</b> switch is the next logical step in a test sequence. Pressing the Charge switch causes the <b>CHARGE</b> indicator to go out.
6	<b>TRIGGER</b> switch	Press this switch (after pressing the <b>CHARGE</b> switch to charge the storage capacitor) to trigger the output impulse waveform. The impulse waveform will appear across the output leads.
7	<b>TRIGGER</b> indicator	This Red indicator is lit to show that pressing the <b>TRIGGER</b> switch is the next logical step in a test sequence. This indicator will turn on after the <b>CHARGE</b> switch is pressed, and will remain on until the <b>TRIGGER</b> switch is pressed. Pressing the <b>TRIGGER</b> switch causes the <b>TRIGGER</b> indicator to go out.
8	<b>VOLTAGE</b> meter	Displays the output voltage set point. This voltage is the open-circuit peak voltage that will appear across the output leads when the trigger button is pressed. The voltage reading will increase from zero to the voltage set point when the Charge switch is pressed. Note that the Voltage meter may indicate that some residual voltage is present on the main storage capacitor, even when the tester is first turned ON. This is due to inherent charging of the internal capacitors. Pressing the <b>TRIGGER</b> switch will discharge the capacitors (be sure not to touch the output and return leads when pressing the trigger switch).
9	<b>OUTPUT</b> jack	The impulse waveform appears on the <b>OUTPUT</b> jack, referenced to the <b>RETURN</b> jack. When the <b>POLARITY</b> switch is in the Normal position ( <b>NOR</b> indicator is lit) the output will be a positive pulse. When the <b>POLARITY</b> switch is in the Reverse position ( <b>REV</b> indicator is lit) the output will be a negative pulse.
10	<b>RETURN</b> jack	This is the return for the impulse waveform. This jack is referenced to the chassis of the MegaPulse, and is referenced to earth ground as long as the MegaPulse is properly grounded. Even though this jack is referenced to ground, it should be treated as hazardous whenever the MegaPulse is turned ON.
11	Model designation area	The specific MegaPulse model is indicated in this area. Optional metering/measurement test points may also be installed in this area.

**Table 2. Controls, Indicators, Connectors – MegaPulse series Front Panel**



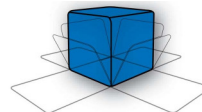


**Figure 3. Controls, Indicators, Connectors – MegaPulse series Rear Panel**

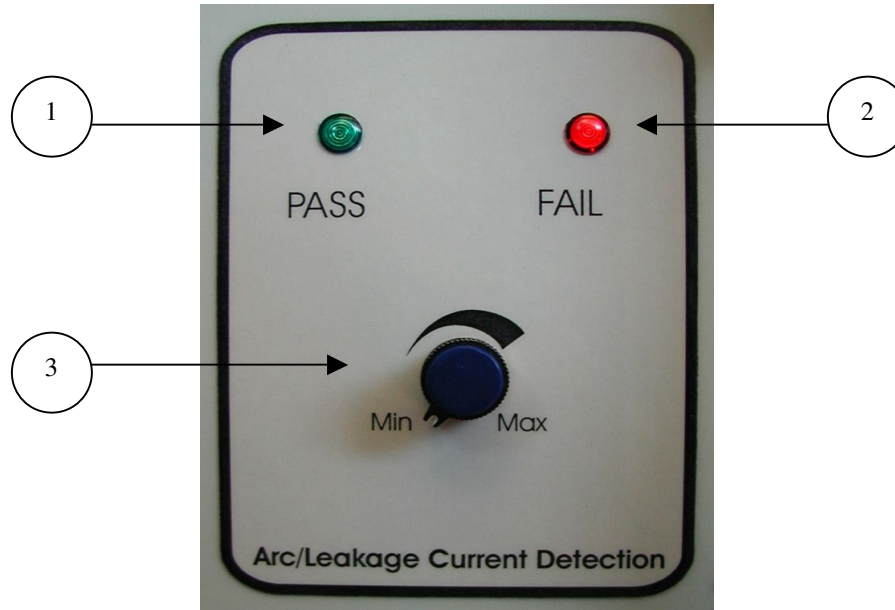


**Table 3. Control, Indicators, Connectors – MegaPulse series Rear Panel**

ITEM NO.	NAME	FUNCTION
1	Appliance Inlet / Fuse holder / Power Switch	Use supplied cordset to connect Tester to appropriate source of supply. Fuse holder provides access for Fuse replacement, and the Power Switch is used to turn the tester ON and OFF.
2	Fuse replacement warning / Rating of supply	Specifies replacement fuse and required supply voltage.
3	Directions	Use this manual for directions on the use of the MegaPulse Antenna Surge Impulse Tester.
4	Voltage Adjust	The voltage adjust is on the front panel.





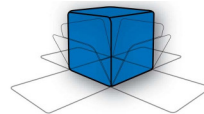


**Figure 4. Controls, Indicators, Connectors**

**MegaPulse series Breakdown Detection**

ITEM NO.	NAME	FUNCTION
1	Green Pass Light	Indicates no Arc and Leakage Current through insulation lower than Sensitivity Control's set point.
2	Red Fail Light	Indicates Arc and/or Leakage Current through insulation higher than Sensitivity Control's set point.
3	Sensitivity Control	Sets Pass/Fail point for the Breakdown Detection circuit. See "Breakdown Detection Circuit" for details in control operation.

Table 4. Control, Indicators, Connectors – MegaPulse series



## Initial Checkout Procedure

The following procedure will verify that the Tester is working correctly. We recommend that this procedure be conducted periodically to ensure proper operation of the Tester.

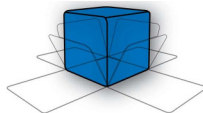
The following items are needed to conduct this procedure:

A measuring instrument to monitor the output waveform. Always ensure that the measuring instrument (usually an oscilloscope with a high-voltage probe) is rated for the voltage involved, and that the frequency response of the instrument and probe are capable of measuring the output waveform of the MegaPulse Impulse Tester. A measuring instrument or probe with a low frequency response will result in erroneous readings that could be mis-read.

### CAUTION

**High voltage generated by the MegaPulse tester is exposed during this test. A risk of shock exists. Exercise care when using the MegaPulse tester.**

1. Connect the Tester to a proper source of supply using the included 18 AWG power supply cord. Make sure that the front panel **VOLTAGE** adjust knob is turned fully counterclockwise.
2. Plug the Output and Return test leads in to the jacks on the front panel.
3. Connect the ends of the test leads to an appropriate measuring instrument (typically an oscilloscope with a high-voltage probe). Note that the **RETURN** lead is referenced to the chassis of the MegaPulse tester.
4. Turn the Tester on.
5. Note that the Voltage meter may indicate that some residual voltage is present on the main storage capacitor, even when the tester is first turned ON. This is due to inherent charging of the internal capacitors. Pressing the **TRIGGER** switch will discharge the capacitors (be sure not to touch the output and return leads when pressing the trigger switch).
6. Push the yellow **CHARGE** button. Verify the red **TRIGGER** indicator is now lit.
7. Adjust the **VOLTAGE** knob so that the front panel LED display is reading a voltage that is suitable for the measuring instrument that is being used. Push the red **TRIGGER** button, and view the resulting impulse waveform on the measuring instrument.
8. Adjust the **VOLTAGE** knob fully counterclockwise, to the minimum position. Turn the rear-panel power switch OFF.



## Testing

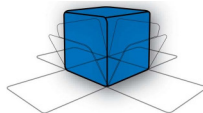
This section describes how the MegaPulse Tester is used to conduct a test. The test can be stopped immediately at any time by turning OFF the rear-panel power switch.

1. Connect the Tester to a proper source of supply using the included 18 AWG power supply cord. Make sure that the front panel **VOLTAGE** adjust knob is turned fully counterclockwise.
2. Plug the Output and Return test leads in to the jacks on the front panel.
3. Connect the ends of the test leads to the equipment under test.
4. Connect the ends of the test leads to the optional 1000:1 voltage sense jack on the front panel (if provided). Alternatively, connect an appropriate measuring instrument (typically an oscilloscope with a high-voltage probe) to the equipment under test in order to monitor the results of the impulse test. Note that the **RETURN** lead is referenced to the chassis of the MegaPulse tester.
5. Turn the Tester on.
6. Note that the Voltage meter may indicate that some residual voltage is present on the main storage capacitor, even when the tester is first turned ON. This is due to inherent charging of the internal capacitors. Pressing the **TRIGGER** switch will discharge the capacitors (be sure not to touch the output and return leads when pressing the trigger switch).
7. Push the yellow **CHARGE** button. Verify the red **TRIGGER** indicator is now lit.
8. Adjust the **VOLTAGE** knob so that the front panel LED display is reading a voltage that is suitable for the measuring instrument that is being used. Push the red **TRIGGER** button, and view the resulting impulse waveform on the measuring instrument.

## TestMinder Operation

TestMinder computer operation is described in a specific manual included with your tester, if so equipped.

Please be sure to start TestMinder before the MegaPulse. For safety considerations, the MegaPulse output should be set to zero when energized.



## **Section 4**

### **Technical Assistance**

For Technical Assistance

Phone: (800) 748-6224

Technical Assistance is available from Compliance West USA between the hours of 8:30 AM and 4:30 PM Pacific Time.

Compliance West USA

2120 Jimmy Durante Blvd, Suite 124

Del Mar, CA., 92014

Phone: (858) 481-6454

FAX: (858) 481-8527

Technical information is also available on our web site at:  
[www.compwest.com](http://www.compwest.com)



## Section 5

### Maintenance and Calibration

#### WARNING

**THESE SERVICE INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID ELECTRIC SHOCK, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.**

#### Introduction

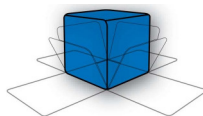
This section of the manual contains maintenance information for the MegaPulse series impulse tester. This maintenance information is divided into service information, general maintenance, a performance test, and a calibration procedure. The performance test is recommended as an acceptance test when the instrument is first received, and later as a preventative maintenance tool to verify proper instrument operation. A 1-year calibration cycle is recommended to maintain the specifications given in Section 1. The test equipment required for the performance test is an oscilloscope and high voltage probe. The test equipment required for the calibration procedure is a DMM able to read the maximum specified peak output voltage of the MegaPulse tester.

#### Service Information

The MegaPulse tester is warranted to the original purchaser for a period of 1 year. This warranty does not cover problems due to misuse or neglect.

Malfunctions which occur within the limits of the warranty will be corrected at no charge. Mail the instrument post paid to the manufacturer. Dated proof of purchase is required for all in-warranty repairs.

The manufacturer is also available for calibration and / or repair of instruments that are beyond their warranty period. Contact the manufacturer for a cost quotation. Ship the instrument and your remittance according to the instructions given by the manufacturer.



## General Maintenance

### Interior Access

#### NOTE

*To avoid contaminating the PWB with oil from your fingers, handle it by the edges or wear gloves. If the PWB becomes contaminated, refer to the cleaning procedures given later in this section.*

### Calibration Access

Use the following procedures to gain access to the calibration adjustments of your instrument.

1. Set Line Power switch to OFF.
2. Disconnect the power cord from the rear of the instrument.
3. Remove the two upper screws on each side of the unit.
4. Grasp the top of the enclosure clamshell and lift it off the front and rear panels.
5. All calibration adjustments are now accessible.
6. To reassemble, reverse steps 1-5 above.

#### NOTE

*With the power cord replaced, the instrument is operational for service.*

#### WARNING

**Dangerous voltages exist when energized. Exercise extreme care when working on an energized circuit.**

### Cleaning

#### CAUTION

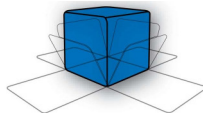
**Do not use aromatic hydrocarbons or chlorinated solvents for cleaning. These solutions will react with the plastic materials used in the instrument.**

Clean the front panel and case with a mild solution of detergent and a damp sponge. Clean dust from the PWB with clean, dry, low pressure (<20 psi).

### Performance Test

The performance test evaluates the performance of your instrument to ensure that the logic, lights and high voltage sections are working properly. This test is recommended for incoming inspection, as a preventative maintenance check, and to verify proper operation during the calibration procedure. It is not necessary to disassemble the instrument to conduct these tests. If the instrument fails any part of the performance test, repair is indicated.

Allow the instrument to stabilize and perform the test at an ambient temperature of  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$  ( $73^{\circ}\text{F} \pm 9^{\circ}\text{F}$ ).



1. Connect the Tester to a proper source of supply using the included 18 AWG power supply cord. Make sure that the front panel **VOLTAGE** adjust knob is turned fully counterclockwise.
2. Plug the Output and Return test leads in to the jacks on the front panel.
3. Connect the ends of the test leads to the optional 1000:1 voltage sense jack on the front panel (if provided) or an appropriate measuring instrument (typically an oscilloscope with a high-voltage probe). Note that the **RETURN** lead is referenced to the chassis of the MegaPulse tester.
4. Turn the Tester on.
5. Note that the Voltage meter may indicate that some residual voltage is present on the main storage capacitor, even when the tester is first turned ON. This is due to inherent charging of the internal capacitors. Pressing the **TRIGGER** switch will discharge the capacitors (be sure not to touch the output and return leads when pressing the trigger switch).
6. Push the yellow **CHARGE** button. Verify the red **TRIGGER** indicator is now lit.
7. Adjust the **VOLTAGE** knob so that the front panel LED display is reading a voltage that is suitable for the measuring instrument that is being used - preferably close to the maximum output voltage of the MegaPulse tester. Push the red **TRIGGER** button, and view the resulting impulse waveform on the measuring instrument.
8. A copy of the actual voltage waveform that was measured on your instrument before shipping were included with the MegaPulse tester at the time of purchase. Compare the impulse waveform to these "as shipped" waveform. If the measured waveform is significantly different than the ideal waveform, then additional evaluation and/or repair of the MegaPulse tester is warranted.
9. Adjust the **VOLTAGE** knob fully counterclockwise, to the minimum position. Turn the rear-panel power switch OFF.

If the results of the performance test are not in accordance with the above, service is required. Remove the Tester from service and contact the manufacturer for servicing information. If the results of the tests above are correct, proceed with the Calibration Procedure.

## Calibration Procedure

The Calibration Procedure should be performed annually and any time the instrument has been repaired. The calibration procedure consists of calibrating the meter reading to agree with the voltage output.

The Performance test in the previous section should be performed with satisfactory results before conducting the Calibration procedure.

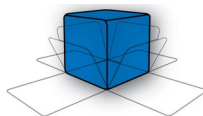
Before starting the Calibration procedure, perform the Calibration access procedure given earlier in this Section.

### NOTE

*Allow the instrument to stabilize for approximately five minutes. Perform all calibration adjustments at an ambient temperature of 23 °C ±5 °C (73 °F ±9 °F).*

### WARNING:

**Calibration Adjustments Are Performed On Live Circuits. Exercise Caution At All Times, And Use A Non-Conductive Tool For All Adjustments.**



## Voltage Calibration Adjustment

Use the following procedure to calibrate the output voltage. Pot R6 and R7 are located on the back side of the front panel LED display board. Verify the location of these two potentiometers after the top cover of the tester has been removed, but before the power cord has been plugged into the tester.

1. Plug in the power cord. Adjust the front panel **VOLTAGE** knob fully counterclockwise to the minimum position. Turn the rear-panel power switch ON. The **CHARGE** indicator should be lit.
2. Adjust R6 so that the voltage reading on the front panel LED display is close to zero, Note that the display may read some residual voltage of approximately 10 volts.
3. Connect an appropriate measuring instrument (typically an oscilloscope with a high-voltage probe) to the equipment under test in order to monitor the results of the impulse test. Note that the **RETURN** lead is referenced to the chassis of the MegaPulse tester.
4. Press the **CHARGE** button. Use the **VOLTAGE** adjustment knob to increase the output voltage to 10000 as read on the front panel meter and press the **TRIGGER** button.
5. The  $V_{peak}$  of the impulse waveform should equal  $10000V \pm 3\%$ .
6. If the  $V_{peak}$  is not within specification, use a non-conductive screwdriver to adjust R7 so that the voltage reading on the front panel LED display agrees with the  $V_{peak}$  reading on the oscilloscope.
7. Turn the **VOLTAGE** adjust knob back down to zero. Allow the output voltage to decay down to a safe level (this may take a few minutes).
8. Turn the rear-panel power switch OFF, and replace the top cover of the MegaPulse tester.

If the results of the calibration procedure are not in accordance with the above, service is required. Remove the Tester from service and contact the manufacturer for servicing information. If the results of the tests above are correct, the tester may be put back into use.

