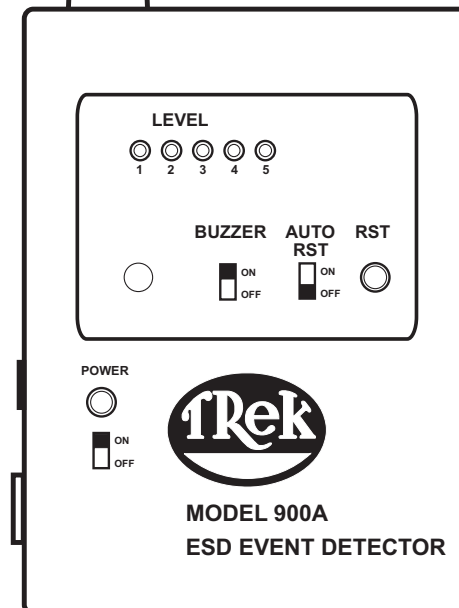


Trek Model 900A ESD Event Detector User Manual



Model 900A Manual Rev. A 0816/JNC Part Number 23411

TREK, INC.
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Medina, NY 14103

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WARRANTY

New instruments sold by TREK, INC. (hereinafter called the "Company") are warranted only as stated below:

Subject to the exceptions and upon the conditions specified below, the Company agrees to correct, either by repair, or in the Company's sole discretion, by replacement, any defect of material or workmanship which develops within one year from the date of original purchase by the customer (user), provided that investigation and factory inspection by the Company discloses that such defect developed under normal and proper use. Repair or replacement are the exclusive remedies under this warranty (batteries are not included under this warranty). The exceptions and conditions mentioned are as follows:

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- (b) The Company shall be released from all obligations under its warranty in the event that repairs or modifications are made by persons other than its own or authorized personnel, unless such repairs by others are made with the prior written consent of the Company.
- (c) THERE ARE NO OTHER WARRANTIES WHICH EXTEND BEYOND THOSE EXPRESSLY PROVIDED FOR HEREIN. THE AFORESAID WARRANTY, THE COMPANY'S OBLIGATIONS, AND LIABILITIES, ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARISING BY LAW OR OTHERWISE. THE CUSTOMER WAIVES ALL OTHER WARRANTIES, GUARANTEES, ALL OTHER LIABILITIES WITHOUT LIMITATION, AND ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TREK, INC. FREES ITSELF TO ALL OBLIGATIONS AND LIABILITIES WITH RESPECT TO LOSS OF USE, REVENUE OR PROFIT, OR INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND AND FROM ANY CAUSE WHATSOEVER ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE MANUFACTURE, SALE, HANDLING, REPAIR, MAINTENANCE OR REPLACEMENT OF SAID PRODUCTS.
- (d) Representation and warranties made by any person, including dealers and representatives of the Company, which are inconsistent or in conflict with the terms of this warranty (including, but not limited to, the limitations of the liability of the Company as set forth above), shall not be binding upon the Company unless reduced to writing and approved by an officer of the Company.
- (e) This warranty shall be governed by the laws of the State of New York.

Thank You

Thank you for buying a Trek product. This product has been designed and built to high standards to give you years of trouble-free service. We welcome any comments or suggestions you may have relative to the operation, performance, and/or quality of this product. If you have any questions, please feel free to contact your Trek Representative at:

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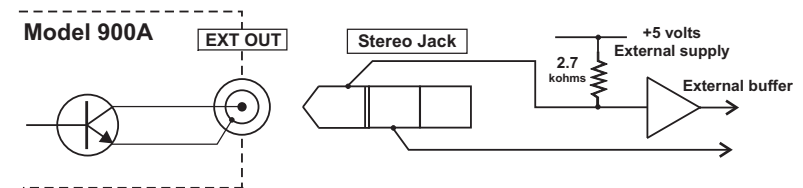
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EXT OUT Connection

An EXT OUT connection provides a method of monitoring ESD events by an external monitoring device.

Once any level ESD event is detected, this output will provide a TTL compatible HIGH. The AUTO RST (Automatic Reset) switch position will determine whether the signal is continued or will reset to a TTL low after two (2) seconds.

There is no circuit protection within the instrument for the EXT OUT connection. To prevent damage to the instrument, the following external circuit is recommended:



Model 900A EXT OUT Diagram

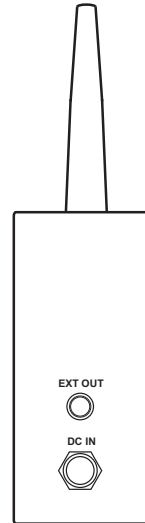
DC IN Connection



For AC line operation, use only the universal power adapter supplied with the unit, otherwise, circuit failure or fire may result.

- 1) Ensure that POWER Switch is OFF.
- 2) Insert the AC Adapter plug into the AC power source (100 V to 240 V AC $\pm 10\%$ at 50 to 60 Hz).
- 3) Insert the DC Jack to **DC IN** connector of the unit (5 V DC at 2.0 A).

The batteries inside the instrument are automatically isolated when the power adapter is used.



Model 900A Side View

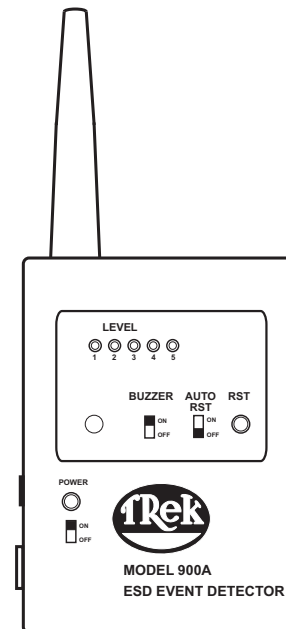


Caution: Do not connect the AC power adapter to any other voltage source other than 90 V AC to 264 V AC. If necessary, use a local AC plug configuration converter for proper adapter termination to the local AC line supply. If the instrument is connected to an AC source whose regulation is poor or noise level is high, malfunctions could occur within the instrument.

Introduction

Electrostatic discharge (ESD) events are caused by the excessive accumulation of electrostatic charges which may result in damage to devices and processes within semiconductor or LCD manufacturing and handling processes.

The Model 900A is a diagnostic tool used to identify incidents or verify suspected areas of ESD activity including detection and awareness of electrostatic discharge events related to CDM (Charge Device Model).



Trek Model 900A ESD Event Detector

Introduction (cont.)

An ESD event sensitive antenna on the unit can be positioned in ESD sensitive environments to detect problem areas of electrostatic charging, by the detection of the resulting ESD events due to the charges.

Trek's Model 900A ESD Event Detector alerts and displays information concerning electrostatic discharges. Upon an ESD event detection, an audible buzzer automatically sounds for two seconds (or it can be switched OFF) while five (5) color coded LEDs visually depict the relative intensity level of the event.

A selector switch determines whether the instrument is reset either automatically after two seconds or manually by a front panel pushbutton. The unit can be powered 5 to 7 hours from batteries or a power adapter can be used for continuous AC line operation.

Trek's Model 900A ESD Event Detector is CE compliant.



Product Protection / Safety Precautions

- Never hold the unit by using the antenna.
- Handle with care and do not drop the unit.
- Use only the AC power adapter supplied with the unit, otherwise, circuit failure or fire may result.

Operation (cont.)



When the operator hand holds the unit, the measurement sensitivity depends on position of the instrument and the location of the signal source. Due to the mass and position of the human body having an influence on the event readings, the instrument should be held far away from the human body for more accurate and stable event detections.

Battery Operation

Once the POWER switch is turned ON and the POWER LED illuminates, the unit is ready to monitor for ESD events. Once an ESD Event is detected, the LEVEL LEDs will illuminate to illustrate the relative strength of the event and the buzzer, if turned on, will sound.

If the battery voltage is low, the POWER LED will not illuminate when the POWER switch is ON. The instrument may function but the sensitivity of the Model 900A is not guaranteed.



Note: *If the POWER LED does not illuminate when POWER switch is ON, the batteries may need replacing. Either replace the batteries or use the AC power adapter provided with the instrument. Contact Trek if further assistance is necessary.*

Operation (cont.)

These levels do not give a direct measurement strength of the ESD event voltage but indicates the relative strength of the signal from the ESD event. Factors like: distance from the signal source, nearby objects (including human beings), and the physical environment affect measurement results and should be taken into consideration when evaluating conclusions.

2. BUZZER Speaker

An audible buzzer will sound to announce that an ESD event has occurred (if the BUZZER select switch is ON).

3. BUZZER Select Switch

When this selector switch is ON, an audible buzzer will sound to announce that an ESD event has occurred. If the BUZZER select switch is OFF, no buzzer will sound when an event occurs.

4. AUTO RST (Automatic Reset)

When the AUTO RST is switched ON and an ESD event is detected, the unit will reset itself automatically after 2 seconds and will be ready to detect another event. When the AUTO RST is switched OFF and an ESD event is detected, the detection level indicators and the buzzer (if on) will be activated until the RST (Reset) button is depressed.

5. RST (RESET Button)

Depressing this pushbutton will clear all previous measurements.

Battery Installation

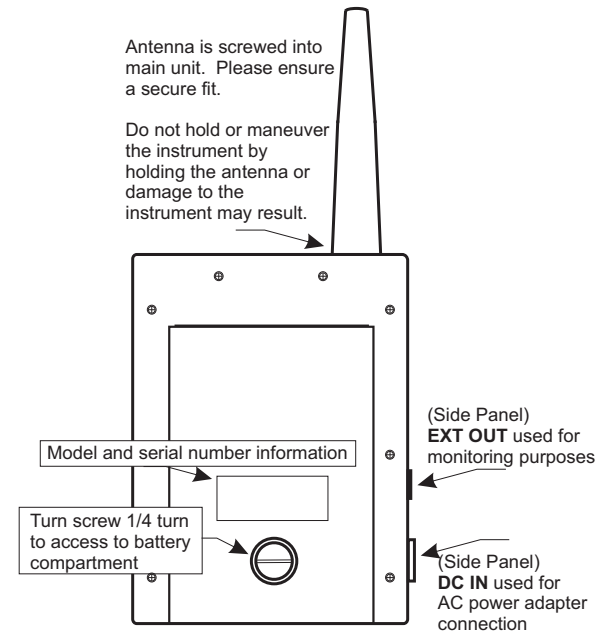
Open the battery compartment by turning the compartment screw 1/4 turn using a coin or screw driver.

Ensure placement of the batteries using the correct polarity.



Caution: *Reversed battery polarity may damage the unit. Trek does not provide instrument warranty for improper loading of the batteries.*

Four AA Alkaline 1.5 V batteries provide 7 hours of operation. Four AA Ni-H 1.5V batteries provide 5 hours of operation. A power adapter can be used for continuous AC line operation.



Model 900A Rear Panel

Antenna Care

The antenna is screwed into place onto the top of the main unit. Please ensure a secure fit. Do not hold or maneuver the instrument by holding the antenna or damage to the instrument may result.

Power

An LED will illuminate when the POWER switch is ON and the instrument is operating.

POWER



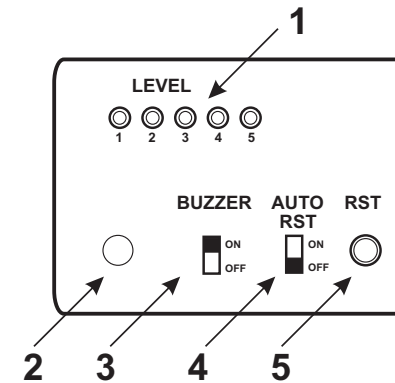
MODEL 900A ESD EVENT DETECTOR

If the battery voltage is low, the POWER LED will not illuminate when the POWER Switch is ON. The instrument may function, but the sensitivity of the Model 900A is not guaranteed.



Note: *If the POWER LED does not illuminate when POWER switch is ON, the batteries may need replacing. Either replace the batteries or use the AC power adapter provided with the instrument. Contact Trek if further assistance is necessary.*

Operation



Model 900A Front Panel Controls and Indicators

The Model 900A detects ESD discharges caused by electrostatic discharge events related to CDM (Charge Device Model), and displays the relative strength of the detected level by illuminating up to 5 LEDs.

1. Detection LEVELs

The Model 900A's antenna is sensitive to surrounding ESD events. Five (5) detection levels indicate and illustrate the relative strength of an event by LED illumination.

5 LED indications:

- 1st Level: Yellow
- 2nd Level: Yellow
- 3rd Level: Yellow
- 4th Level: Red
- 5th Level: Red