

ANT-240

BASIC Operation Manual



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01 Principle of Operation

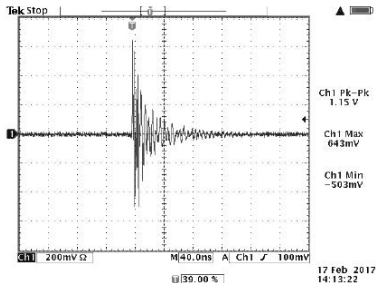
ESD events (discharges) generate electromagnetic radiation.

The stronger the ESD event, the stronger the resulting electromagnetic field.

The ANT-240 is a miniature antenna designed for use with an oscilloscope and is tuned to detect electromagnetic fields with the unique signature of ESD events. It receives signals generated by ESD events and measures the magnitude of each event. If the measured event magnitude exceeds the preset threshold, the event is recorded and reported. Events below the threshold level are ignored.

ESD events occur over extremely short durations, typically in the nanosecond (ns) range.

The ANT-240 system detects the magnitude of each individual event and represents it as a pulse signal on the connected oscilloscope.



The pulse represents the waveform of the ESD event, and its amplitude corresponds to the magnitude of the event. When measurements are conducted under identical conditions, the pulse amplitude is proportional to the strength of the ESD event.

By measuring the pulse amplitude, the relative strength of each ESD event can be evaluated.

02 Necessity of ESD Event Measurement

ESD event detection is essential for evaluating CDM and Class 0 ESD control processes and provides an effective method for analyzing CDM events occurring in automated handling equipment.

This system supports advanced ESD measurement capabilities to enhance understanding of ESD phenomena.

Measurement results may be influenced by various environmental and process-related factors. Considering these characteristics, the ANT-240 is designed based on extensive experience in ESD event detection and data analysis.

03 Measurement Equipment Requirements

3.1 Oscilloscope

- Use of a high-speed oscilloscope is required
- Minimum bandwidth: 1 GHz (≥ 6 GHz recommended for more detailed analysis)

3.2 ESD Antenna (ANT-240)

- RF signal detection antenna specifically designed for ESD event monitoring

04 Measurement Method

4.1 Trigger Level Adjustment

- Adjust the oscilloscope trigger level to capture ESD event waveforms reliably
- Proper trigger settings are required to minimize false triggering caused by ambient electrical noise.

4.2 Waveform Analysis:

The detected ESD event waveforms may be analyzed for the following characteristics:

- Rise Time
- Fall Time
- Peak-to-peak amplitude

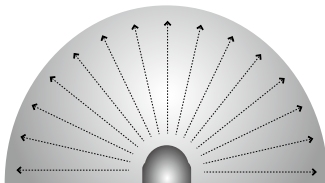
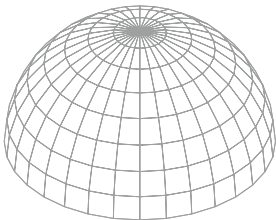
These parameters may be used to compare **relative strength and characteristics of ESD events.**

05 Technical Considerations and Limitations

Measurement results using this method may be influenced by various factors. The following factors should be considered when conducting measurements:

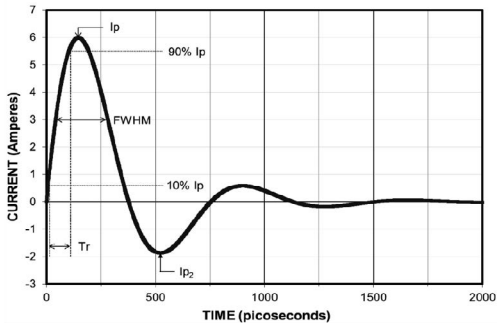
- **Distance:** Distance between the ESD source and the antenna
- **Orientation:** Relative orientation between the antenna and the ESD source
- **Amplitude:** Signal amplitude variation according to event strength

Therefore, measurement results represent relative values rather than absolute quantifications. The ANT-240 is designed for comparative measurements and trend monitoring under controlled measurement conditions.



Note that this method employs indirect measurement and does not directly measure ESD current or voltage. Reproducibility of results may be affected by changes in measurement conditions, including environment, equipment settings, and antenna position.

06 Applicable International Standards



- SP17.1 Process Assessment
- SEMI E78
- ANSI/ESD/JEDEC JS-002

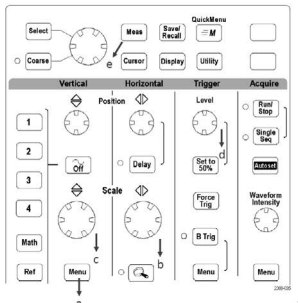
07 Oscilloscope Setup Procedure

Oscilloscope Set-Up for ESD Measurement

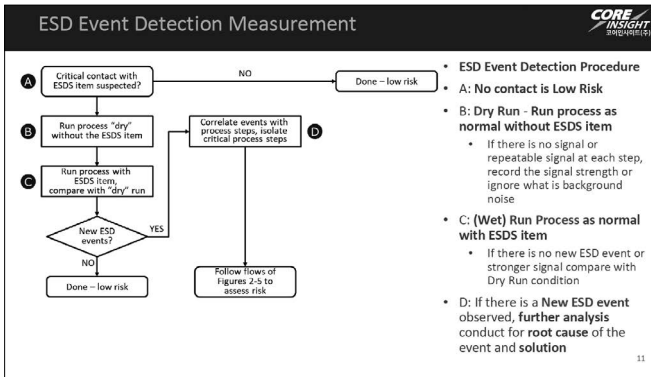


• Measurement Parameter SetUp

1. Turn On the **Unit Under Test (UUT)**
2. Connect **ESD Antenna** to BNC Channel 1
3. Press **Menu** and Select **DC coupling** and **50 ohm** input impedance
4. **Time Scale** Change : Adjust Horizontal dial to **100ns** per division
5. **Voltage Scale** Change : Adjust Vertical dial to **100mV** per division
6. **Trigger Level** adjust to **100mV**
7. Press **Meas** and Select **Pk-Pk** measurement, Select **Rise Time** and **Fall Time**
8. Place **ESD Antenna** at **100mm** distance to target if possible, if not place antenna as close as possible to target.
9. Press **Single Seq** and ready to capture signal
10. **Start** ESD event detection measurement



08 Measurement Examples



09 Technical Support Scope

The ANT-240 is designed for straightforward operation, and a basic User Guide is provided free of charge with the product. However, proper interpretation of measurement results requires technical expertise in ESD testing and analysis. The following technical services are not included with the product purchase:

- Interpretation of oscilloscope waveforms
- Measurement data analysis or validation
- Determination of normal or abnormal measurement results
- Process or production line diagnostics and evaluation

As production environments and operating conditions vary significantly and cannot be fully assessed remotely, technical judgments or interpretations of measurement data are not provided as standard support.

In-depth analysis, evaluation, or on-site diagnostics are available as paid services under separate agreement. Please contact for information on ESD assessment and production line audit services.

10 Limited Warranty

Core Insight, Inc. warrants that the ANT-240 is free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of purchase. This warranty applies only to products purchased directly from Core Insight, Inc. or through its authorized distributors and is valid only for the original purchaser.

The ANT-240 is a passive sensor and does not contain active electronic circuits requiring calibration. Accordingly, the ANT-240 is not a calibration-required instrument, and no calibration or recalibration service is provided or required. As part of quality assurance, functional testing only is performed to verify proper operation of the product.

This warranty does not apply to products or parts subjected to misuse, neglect, accident, or abnormal operating conditions. To the extent permitted by applicable law, Core Insight, Inc. shall not be liable for any consequential, incidental, or special damages.

In the event of product failure covered by this warranty, Core Insight, Inc. will repair products returned through authorized distributors or, if purchased directly, returned to the manufacturer, provided that inspection confirms the product qualifies for warranty coverage.

At its discretion, Core Insight, Inc. may repair the product or replace it with new or factory-refurbished components or units.

Repairs or replacements for products returned within one year of purchase will be provided at no charge. If failure results from misuse, neglect, accident, or abnormal operating conditions, repair costs will be charged at cost.

Transportation costs are not covered under this warranty.

11 Product Overview

1. Package Contents

- ANT-240 Main Unit
- Coaxial Cable
- User Manual

2. Specifications

2.1 Main Unit

- Diameter: Ø20mm
- Height: 240mm (including handle and cable)

2.2 Coaxial Cable

- Type: SMA to BNC
- Length: 1,000mm

3. Operating Condition

- Temperature: -40°C to 90°C

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