Impact Disdrometer (Model: RD-80)

A Ground-Based Sensor for Measuring Precipitation Drop Size and Intensity

INTRODUCTION:

The RD-80 Impact Disdrometer is a ground-based instrument designed to measure the size and fall velocity of individual raindrops. It operates based on the impact principle—detecting the force generated as hydrometeors strike its sensor surface. The RD-80 provides detailed drop size distribution (DSD), rainfall rate, and kinetic energy of precipitation, essential for hydrological studies and model validation. It is especially valuable in quantifying rainfall characteristics for high-resolution studies in urban hydrology, soil erosion, and precipitation microphysics.

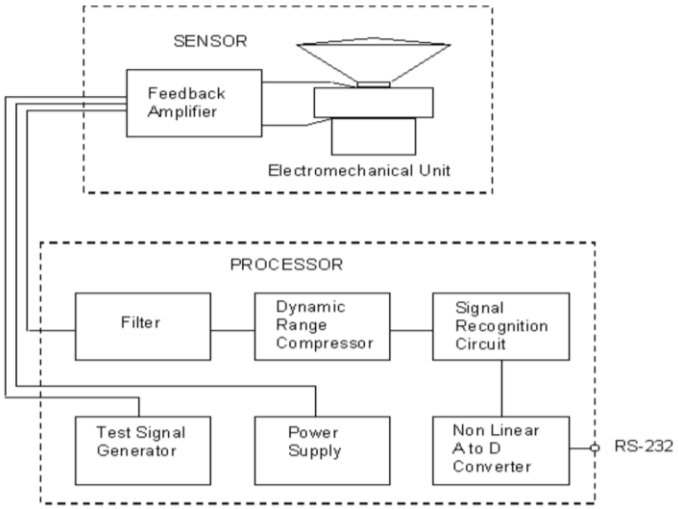
OBJECTIVES:

➢ Real-time measurement of raindrop size and velocity
➢ Drop Size Distribution analysis for hydrological modeling
➢ Validation of weather radar and satellite rainfall data
➢ Research in precipitation microphysics
➢ Support for urban water management and erosion studies

DATA OUTPUT:

➢ Drop Size Distribution (DSD)
➢ Rainfall Rate (mm/h)
➢ Drop Count and Velocity
➢ Kinetic Energy of Rainfall
➢ Accumulated Precipitation

FLOW DIAGRAM:



KEY SPECIFICATIONS:

➢ Measurement Range: 0.3 – 5.3 mm drop diameter
➢ Sampling Interval: 30 second (adjustable)
➢ Sampling area: 50 cm^2
➢ Data Output: ASCII via RS-232
➢ Operating Temperature: 0°C to +40°C
➢ Power Requirement: 9-18 V DC

MEASUREMENT AND WORKING PRINCIPLE:

The RD-80 detects raindrops as they impact a sensitive surface, converting mechanical impact energy into electrical signals. These signals are analyzed to estimate drop size and velocity based on amplitude and duration. From the collective impacts over time, it computes drop size distributions, rainfall intensity, and kinetic energy.

KEY FEATURES:

➢ Accurate Drop Size and Velocity Detection
➢ Real-Time Data Processing
➢ Robust Design: Weather-resistant and maintenance-friendly
➢ Suitable for All Climates: Operates in diverse environments

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