Patent Search

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Abstract:

The invention discloses an automatic rainfall sensing and protection system designed to detect the onset of rain and autonomously deploy protective mechanisms to safe weather-sensitive structures, equipment, and stored materials. The system incorporates a rainfall sensing unit coupled to a signal-conditioning circuit that filters and stabi moisture-detection signals. A microcontroller-based control unit processes the conditioned signal through an adaptive threshold and decision-logic module to confirm rair events. Upon detection, an actuator driver circuit activates a protective actuator that operates a retractable cover, shutter, flap, or equivalent protective mechanism. Optio alert modules and wireless communication interfaces provide user notifications and remote monitoring. The system offers reliable rain detection, rapid automatic respons reduced manual intervention, and enhanced protection across residential, commercial, agricultural, and industrial environments.

Complete Specification

Description:FIELD OF THE INVENTION

[001] The present invention relates generally to automated environmental-responsive protection systems and, more particularly, to an Automatic Rainfall Sensing and Protection System configured to detect the onset of rain or moisture and autonomously initiate protective actions for safeguarding structures, goods, and equipment. Th invention pertains to the fields of sensor-based automation, environmental monitoring, microcontroller-driven actuation, and intelligent protection mechanisms. It is applicable across residential, commercial, industrial, and storage environments, including homes, godowns, warehouses, manufacturing units, and automotive systems. invention provides real-time rain detection and enables automated deployment of protective covers, shutters, or alerts, thereby mitigating rain-induced damage to weatl sensitive materials, improving safety, and enhancing operational efficiency in rain-prone regions.

BACKGROUND OF THE INVENTION

[002] Rainfall presents a significant risk to a wide variety of outdoor and semi-exposed environments, including residential balconies, commercial storefronts, agricultura storage facilities, vehicle interiors, open machinery, and weather-sensitive electrical or electronic devices. Conventional protective measures typically rely on manual intervention, such as closing shutters, pulling covers, repositioning equipment, or moving goods to sheltered areas. These manual systems remain inherently limited because they depend on human presence, reaction time, and environmental awareness. In many instances—such as unexpected rainfall during night hours, during

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