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(57) Abstract :

The invention discloses an integrated device for airflow management in HVAC duct systems, comprising an airflow sensor (1), electronically actuated damper (2), microcontroller unit (3), power supply module (4), wireless communication interface (5), and monitoring display (6). The device enables accurate measurement, automated regulation, real-time monitoring, and communication with building automation systems. By integrating sensing, actuation, and control, the invention improves energy efficiency, thermal comfort, and fault detection while reducing maintenance complexity. It offers a compact, modular, and retrofittable solution for modern HVAC applications.

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