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(57) Abstract :

The present invention discloses a lightweight smart badge device (100) for digital identity management. The device comprises a biometric sensor (101), BLE module (102), thin-film battery (103), microcontroller (104), e-ink display (105), and secure memory (106). It authenticates users locally and communicates identity via wireless protocols. The badge supports dynamic identity display, tamper alerts, and emergency signaling. Designed for secure access and interoperability, the device operates with low power and ensures privacy-preserving real-time authentication.

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