

ABH-200-BLE-hub

Wi-Fi gateway + BLE hub · One hub, many nodes

ABH-200 family — Online monitors & gateways · Data logger datasheet

The pharmacy hub: a Wi-Fi gateway that also scans BLE, collecting ABH-100-M-BLE nodes into the cloud — with its own T/RH channel.

2 channels	IP54 in use / IP65 capped	E-paper	409,600 readings	Battery: Always on when powered (calc.)
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Specifications

Product type	Online · gateway / hub
Sensing channels	2 — Temperature · Humidity · Node backlogs
Temperature	SHT41 · ± 0.2 °C typ
Humidity	SHT41 · ± 1.8 %RH typ
Node backlogs	Drains stored history from ABH-100-M-BLE nodes over BLE
Measurement accuracy	± 0.2 °C typ · ± 0.4 °C max (0–65 °C) on-board SHT41
Display & indication	1.54" e-paper 200 × 200 · –25...+50 °C · holds last reading while asleep
Connectivity	Wi-Fi + BLE central (ESP32-C3-MINI-1U) — Internal FPC · ≤ 2.33 dBi
Power	USB 5 V (≈ 103 mA while hub-scanning) · CR2032 RTC ≈ 10 yr
Battery life	Always on when powered · RTC cell ≈ 10 yr — One powered point per zone of nodes
Memory	16 MB W25Q128JV · 409,600 readings (plus node backlogs) · separate never-erased audit region
Sample interval	1 s minimum · node scan adaptive
Enclosure	88.2 × 69.9 × 16.8 mm · Healthcare-grade disinfectant-resistant PC/ABS · UL94 V-0 · white
Ingress protection	IP54 in use / IP65 capped (design targets)
Mounting	Keyhole (2×) + bonded 10×2 mm magnets
Operating band	–25 to +50 °C (e-paper limit)
Firmware & transport	Signed .abhfw packages · dual-bank A/B · RSA-2048 · trial boot with automatic rollback · MQTT over TLS 1.2+ with per-device credentials (mTLS supported) · X.509 identity
Factory identity	ABH-[model]-[YYWW]-[5-digit sequence] — factory identity written to the ID EEPROM
Pairs with	ABH-100-M-BLE nodes (adaptive 15-min collection window)
Security	BLE LE Secure Connections · read-only tier

Applications

Warehouses & humidity-critical storage	Many points, one record — T/RH monitors per zone, or low-cost BLE nodes collected by one hub.
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Part of the Abhilekh platform

One 80 × 50 mm 4-layer platform PCB — 145 parts, single-sided SMT — becomes 20 SKUs by BOM selection and a SKU record in the on-board ID EEPROM.

Firmware updates	Signed .abhfw packages · dual-bank A/B · RSA-2048 · trial boot with automatic rollback
Data transport	MQTT over TLS 1.2+ with per-device credentials (mTLS supported) · X.509 identity
Offline evidence	Plug an offline logger into a PC and it enumerates a FAT16 drive with README.TXT, DATA.CSV and an ECDSA P-256-signed REPORT.PDF — a self-verifying trip record.
Calibration	Probe channel templates live in the ID EEPROM; the platform tracks NIST-traceable calibration certificates, due dates and reminders per probe.
Certification roadmap	EN 12830:2018 — temperature recorders · CE — RED / EMC / safety · FCC Part 15 · WHO PQS E006 — vaccine cold chain · IEC 61010-1 / IEC 62368-1 · UN 38.3 / IEC 62133-2 — cells & packs — targets, not held certificates

The ABH line is at the design-frozen, pre-production stage: every enclosure has passed generated fit-check geometry (791/791 checks, 20/20 SKUs) and every battery-life, drop, thermal and IP figure shown is a calculated or simulated design estimate — measured values replace them as validation hardware runs. Regulatory marks above are the certification roadmap, not held certificates.

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