

ABH-100-D

Dry-ice & ULT logger · **−80 °C, logger outside**

ABH-100 family – Offline & transit loggers · [Data logger datasheet](#)

For ULT freezers and dry-ice shipper monitoring: the logger stays in ambient, a Class-A PT100 probe on a 3 m cable measures the cold.

3 channels	IP65	LED indication	409,600 readings	Battery: ≈4.6 yr (calc.)
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Specifications

Product type	Offline · probe logger
Sensing channels	3 — Probe temperature · Ambient T + RH
Probe temperature	PRB-PT100-3W Class A · −50...+200 °C · ±0.15 °C at 0 °C
Ambient T + RH	SHT41 (logger lives outside the freezer)
Measurement accuracy	±0.15 °C at 0 °C · PT100 Class A (IEC 60751) probe
Display & indication	LED status indicator (green = OK · blinking red = excursion · solid red = fault)
Connectivity	Offline — no radio
Power	ER14505M AA Li-SOCl ₂ 3.6 V · 2.0 Ah
Battery life	≈4.6 yr (calculated, spec-compliant logging at firmware defaults; ≈3.3 yr worst-case) — MAX31865 RTD front-end needs ≥3.0 V — 3.6 V cell behind the buck
Memory	16 MB W25Q128JV · 409,600 readings · separate never-erased audit region
Sample interval	300 s default · 1 s minimum
Enclosure	88.2 × 69.9 × 28.3 mm · probe pod 38.5 mm · Healthcare-grade disinfectant-resistant PC/ABS · UL94 V-0 · white
Ingress protection	IP65 (design target)
Mounting	Keyhole (2×) + bonded 10×2 mm magnets · M12 probe port in pod
Operating band	−40 to +70 °C (logger) · probe to −50 °C
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
Probe port	M12 A-coded on the probe pod (J8)
Local indication	LED status indicator (green = OK · blinking red = excursion · solid red = fault)

Applications

ULT freezers (−80 °C) & dry ice	Logger stays outside the freezer; a Class-A PT100 probe measures inside — accuracy where it matters.
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Compatible probes

PRB-PT100-3W — PT100 immersion probe	PRB-PT100-3W-3M · PT100 Class A (IEC 60751:2022) · ± 0.15 °C at 0 °C · –50 to +200 °C
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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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